

GAP

Release 4.4.12
17 December 2008

Index

The GAP Group

<http://www.gap-system.org>

Full Index

This index covers the five main books of the GAP manual, pages are given with respect to each manual: **Ref**, **Tut**, **Prg**, **New**, and **Ext**. A page number in *italics* refers to a whole section which is devoted to the indexed subject. Keywords are sorted with case and spaces ignored, e.g., “**PermutationCharacter**” comes before “permutation group”.

- (Near-)Additive Magma Categories, *R 558*
- (Near-)Additive Magma Generation, *R 559*
- +, *R 48*
- , *R 48*
- A, *R 30*
- B, *R 30*
- C, *R 31*
- D, *R 30*
- K, *R 29*
- L, *R 29*
- M, *R 30*
- N, *R 30*
- O, *R 30*
- P, *R 31*
 - on Macintosh, *R 31*
- R, *R 29*
- T, *R 31*
- U, *R 31*
- W, *R 31*
 - on Macintosh, *R 32*
- X, *R 31*
- Y, *R 31*
- a, *R 30*
 - on Macintosh, *R 32*
- b, *R 27*
- e, *R 27*
 - on Macintosh, *R 32*
- f, *R 27*
 - on Macintosh, *R 32*
- g, *R 28*
- g -g, *R 28*
- h, *R 27*
- i, *R 31*
- l, *R 29*
- m, *R 28*
- n, *R 28*
 - on Macintosh, *R 32*
- o, *R 28*
 - on Macintosh, *R 32*
- p, *R 31*
- q, *R 27*
- r, *R 29*
- x, *R 28*
- y, *R 28*
- z, *R 31*
 - on Macintosh, *R 31*
- ., *E 16*
- .gaprc, *R 33*
- /, *R 48*
 - for character tables, *R 734*
- %, *E 24*
- %display, *E 25*
- %enddisplay, *E 25*
- *, *R 48*
 - for character tables, *R 734*
- \', *R 252*
- \., *E 16*
- \>, *E 16*
- \Appendices, *E 11*
- \BeginningOfBook, *E 12*
- \Bibliography, *E 13*
- \C, *E 20*
- \Chapter, *E 15*
- \Chapters, *E 11*
- \Colophon, *E 11*
- \Day, *E 14*
- \Declaration, *E 27*
- \EndOfBook, *E 13*
- \F, *E 20*
- \FileHeader, *E 27*
- \FrontMatter, *E 13*
- \Index, *E 13*
- \Mailto, *E 16*
- \Month, *E 14*

`\N`, E 20
`\OneColumnTableOfContents`, E 12
`\Package`, E 11
`\PseudoInput`, E 14
`\Q`, E 20
`\R`, E 20
`\Section`, E 15
`\TableOfContents`, E 11
`\TitlePage`, E 11
`\Today`, E 14
`\URL`, E 16
`\UseGapDocReferences`, E 12
`\UseReferences`, E 12
`\XYZ`, R 252
`\Year`, E 14
`\Z`, E 20
`\`, R 252
`\`, R 252
`\accent127`, E 16
`\atindex`, E 16
`\b`, R 252
`\beginexample`, E 22
 indicating unstable output, E 23
`\beginitems`, E 20
`\beginlist`, E 21
`\begin tt`, E 22
`\c`, R 252
`\calR`, E 20
`\endexample`, E 22
`\enditems`, E 20
`\endlist`, E 21
`\end tt`, E 22
`\fmark`, E 16
`\in`, operation for testing membership, R 277
`\index`, E 16
`\index tt`, E 16
`\item`, E 21
`\itemitem`, E 21
`\ker nt tindent`, E 16
`\lq`, E 16
`\matrix`, E 23
`\n`, R 252
`\nolabel`, use in index and label suppression, E 15
`\null`, use in index suppression, E 15
`\package`, E 16
`\pif`, E 16
`\r`, R 252
`\rq`, E 16

\sim , R 48
 for class functions, R 773
 1-Cohomology, R 380
 2-Cohomology and Extensions, R 459

A

A, Attribute mark-up, E 16
 AbelianGroup, R 512
 AbelianInvariants, for character tables, R 736
 for groups, R 369
 Abelian Invariants for Subgroups, R 479
 AbelianInvariantsMultiplier, R 383
 AbelianInvariantsNormalClosureFpGroup, R 479
 AbelianInvariantsNormalClosureFpGroupRrs, R 479
 AbelianInvariantsOfList, R 244
 AbelianInvariantsSubgroupFpGroup, R 479
 AbelianInvariantsSubgroupFpGroupMtc, R 479
 AbelianInvariantsSubgroupFpGroupRrs, R 479
 AbelianNumberField, R 592
 abelian number field, R 594
 abelian number fields, canonicalbasis, R 595
 abelian number fields, Galois group, R 597
 AbelianSubfactorAction, R 405
 About Functions, T 25
 About Group Actions, R 397
 AbsInt, R 127
 AbsoluteIrreducibleModules, R 754
 AbsoluteValue, R 159
 absolute value of an integer, R 127
 AbsolutIrreducibleModules, R 754
 abstract word, R 326
 AbstractWordTietzeWord, R 488
 accessing, list elements, R 175
 record elements, R 263
 Accessing a Module, R 698
 Accessing Record Elements, R 263
 Accessing Subgroups via Tables of Marks, R 719
 Accessing Weak Pointer Objects as Lists, E 53
 Acknowledgements, T 12
 AClosestVectorCombinationsMatFFFEVecFFE, R 220
 AClosestVectorCombinationsMatFFFEVec-FFFECoords, R 220
 ActingAlgebra, R 635
 ActingDomain, R 409
 Acting OnRight and OnLeft, R 435
 Action, R 404

- action, by conjugation, R 398
 - on blocks, R 398
 - on sets, R 398
- ActionHomomorphism, R 403
- Action of a group on itself, R 405
- Action on Subfactors Defined by a Pcgs, R 450
- actions, R 398
- Actions of Groups, T 47
- Actions of Matrix Groups, R 431
- ActorOfExternalSet, R 411
- Add, R 178
- add, an element to a set, R 198
- AddCoeffs, R 218
- AddGenerator, R 490
- AddGenerators, R 346
- AddGeneratorsExtendSchreierTree, R 427
- AddHashEntry, N 10
- Adding a new Attribute, P 38
- Adding a new Operation, P 37
- Adding a new Representation, P 39
- Adding new Concepts, P 40
- addition, R 48
 - list and non-list, R 187
 - matrices, R 224
 - matrix and scalar, R 224
 - operation, R 297
 - rational functions, R 671
 - scalar and matrix, R 224
 - scalar and matrix list, R 226
 - scalar and vector, R 216
 - vector and scalar, R 216
 - vectors, R 216
- Addition of a Method, P 35
- Additive Arithmetic for Lists, R 187
- AdditiveInverse, R 295
- AdditiveInverseAttr, R 295
- AdditiveInverseImmutable, R 295
- AdditiveInverseMutable, R 295
- AdditiveInverseOp, R 295
- AdditiveInverseSameMutability, R 295
- AdditiveInverseSM, R 295
- AdditiveNeutralElement, R 560
- AddRelator, R 490
- AddRowVector, R 218
- AddRule, R 346
- AddRuleReduced, R 346
- AddSet, R 198
- AdjointAssociativeAlgebra, R 652
- AdjointBasis, R 624
- AdjointMatrix, R 652
- AdjointModule, R 637
- Advanced Features of GAP, R 30
- Advanced List Manipulations, R 206
- Advanced Methods for Dixon-Schneider
 - Calculations, R 755
- AffineAction, R 450
- AffineActionLayer, R 450
- AffineOperation, R 450
- AffineOperationLayer, R 450
- A First Attempt to Implement Elements of Residue
 - Class Rings, P 45
- Agemo, R 366
- AgGroup, T 79
- Algebra, R 615
- AlgebraByStructureConstants, R 618
- AlgebraGeneralMappingByImages, R 629
- AlgebraHomomorphismByImages, R 629
- AlgebraHomomorphismByImagesNC, R 629
- AlgebraicExtension, R 692
- Algebraic Structure, T 69
- Algebras, T 61
- AlgebraWithOne, R 615
- AlgebraWithOneGeneralMappingByImages, R 630
- AlgebraWithOneHomomorphismByImages, R 630
- AlgebraWithOneHomomorphismByImagesNC, R 630
- AllBlocks, R 408
- AllIrreducibleSolvableGroups, R 530
- AllLibraryGroups, R 518
- AllPrimitiveGroups, R 518
- AllSmallGroups, R 521
- AllTransitiveGroups, R 518
- Alpha, R 825
- AlternatingGroup, R 512
- and, R 171
 - for filters, R 172
- An Example of Advanced Dixon-Schneider
 - Calculations, R 756
- An Example of a GAP Package, E 36
- ANFAutomorphism, R 597
- AntiSymmetricParts, R 790
- antisymmetric relation, R 316
- Append, R 179
- AppendTo, R 95
 - for streams, R 101
- Apple, R 841
- ApplicableMethod, R 78, T 75

- ApplicableMethod, *R* 78
- Applicable Methods and Method Selection, *P* 12
- ApplicableMethodTypes, *R* 78
- Apply, *R* 201
- ApplyFunc, *T* 79
- ApplySimpleReflection, *R* 649
- ApproximateSuborbitsStabilizerPermGroup, *R* 425
- ARCH_IS_MAC, *R* 35
- ARCH_IS_UNIX, *R* 35
- ARCH_IS_WINDOWS, *R* 35
- arg, special function argument, *R* 46
- ArithmeticElementCreator, *P* 43
- Arithmetic for External Representations of Polynomials, *R* 691
- Arithmetic for Lists, *R* 185
- Arithmetic Issues in the Implementation of New Kinds of Lists, *P* 27
- Arithmetic Operations for Class Functions, *R* 772
- Arithmetic Operations for Elements, *R* 297
- Arithmetic Operations for General Mappings, *R* 310
- Arithmetic Operators, *R* 48
- Arrangements, *R* 149
- arrow notation for functions, *R* 57
- AsAlgebra, *R* 624
- AsAlgebraWithOne, *R* 625
- AsBinaryRelationOnPoints, *R* 317
- AsBlockMatrix, *R* 240
- AscendingChain, *R* 372
- AsDivisionRing, *R* 579
- AsDuplicateFreeList, *R* 200
- A Second Attempt to Implement Elements of Residue Class Rings, *P* 47
- AsField, *R* 579
- AsFreeLeftModule, *R* 576
- AsGroup, *R* 351
- AsGroupGeneralMappingByImages, *R* 387
- AsLeftIdeal, *R* 566
- AsLeftModule, *R* 574
- AsList, *R* 272
- AsMagma, *R* 321
- AsMonoid, *R* 546
- AsPolynomial, *R* 673
- AsRightIdeal, *R* 566
- AsRing, *R* 563
- AsSemigroup, *R* 539
- Assert, *R* 81
- AssertionLevel, *R* 81
- Assertions, *R* 81
- AsSet, *R* 272
- AssignGeneratorVariables, *R* 333
- assignment, *T* 22
 - to a list, *R* 177
 - to a record, *R* 263
 - variable, *R* 50
- Assignments, *R* 50
- AssignNiceMonomorphismAutomorphismGroup, *R* 393
- AssociatedPartition, *R* 154
- AssociatedReesMatrixSemigroupOfDClass, *R* 545
- Associates, *R* 569
- associativity, *R* 48
- AssocWordByLetterRep, *R* 338
- AsSomething, *T* 70
- AsSortedList, *R* 272
- AsSSortedList, *R* 272
- AsStruct, *R* 289
- AsSubalgebra, *R* 625
- AsSubalgebraWithOne, *R* 625
- AsSubgroup, *R* 352
- AsSubgroupOfWholeGroupByQuotient, *R* 477
- AsSubmagma, *R* 322
- AsSubmonoid, *R* 546
- AsSubsemigroup, *R* 539
- AsSubspace, *R* 600
- AsSubstruct, *R* 292
- AsTransformation, *R* 556
- AsTransformationNC, *R* 556
- AsTwoSidedIdeal, *R* 566
- AsVectorSpace, *R* 599
- at exit functions, *R* 73
- ATLAS Irrationalities, *R* 161
- AtlasIrrationality, *R* 163
- atomic irrationalities, *R* 161
- Attributes, *R* 121, *T* 72
- Attributes and Operations for Algebras, *R* 623
- Attributes and Properties for (Near-)Additive Magmas, *R* 560
- Attributes and Properties for Collections, *R* 273
- Attributes and Properties for Magmas, *R* 323
- Attributes and Properties for Matrix Groups, *R* 430
- Attributes and Properties of Character Tables, *R* 734
- Attributes and Properties of Elements, *R* 293
- Attributes of and Operations on Equivalence Relations, *R* 318

Attributes of Tables of Marks, *R 709*
 Attributes vs. Record Components, *T 81*
 AttributeValueNotSet, *R 122*
 AugmentationIdeal, *R 664*
 AugmentedCosetTableInWholeGroup, *R 471*
 AugmentedCosetTableMtc, *R 471*
 AugmentedCosetTableRrs, *R 471*
 Augmented Coset Tables and Rewriting, *R 471*
 Authorship and Maintenance, *T 12*
 automatic loading of gap packages, *R 846*
 AutomorphismDomain, *R 392*
 AutomorphismGroup, *R 392*
 for groups with pcgs, *R 451*
 automorphism group, of number fields, *R 597*
 Automorphisms and Equivalence of Character
 Tables, *R 764*
 AutomorphismsOfTable, *R 738*

B

b_N , *R 161*
 backslash character, *R 252*
 backspace character, *R 252*
 Backtrace, *T 86*
 GAP3 name for Where, *R 70*
 Backtrack, *R 427*
 BANNER, *R 851*
 BaseFixedSpace, *R 231*
 BaseIntersectionIntMats, *R 241*
 BaseIntMat, *R 241*
 BaseMat, *R 234*
 BaseMatDestructive, *R 234*
 BaseOfGroup, *N 20*, *R 424*
 BaseOrthogonalSpaceMat, *R 234*
 BasePointOfSchreierTransversal, *N 17*
 Bases of Vector Spaces, *R 601*
 BaseStabChain, *R 424*
 BaseSteinitzVectors, *R 234*
 Basic Actions, *R 398*
 Basic Groups, *R 511*
 Basic Operations for Class Functions, *R 770*
 Basic Operations for Lists, *R 175*
 BasicWreathProductOrdering, *R 285*
 Basis, *R 602*
 BasisNC, *R 602*
 BasisVectors, *R 603*
 Bell, *R 148*
 Bernoulli, *R 148*
 BestQuoInt, *R 129*

BestSplittingMatrix, *R 755*
 BiAlgebraModule, *R 633*
 BiAlgebraModuleByGenerators, *R 633*
 bibtex, *E 26*
 BilinearFormMat, *R 648*
 binary relation, *R 315*
 BinaryRelationByElements, *R 315*
 BinaryRelationOnPoints, *R 317*
 BinaryRelationOnPointsNC, *R 317*
 Binary Relations on Points, *R 317*
 BinaryRelationTransformation, *R 557*
 BindGlobal, *P 31*, *R 45*
 Binomial, *R 147*
 blank, *R 41*
 BlistList, *R 211*
 Block Matrices, *R 240*
 BlockMatrix, *R 240*
 Blocks, *R 408*
 BlocksInfo, *R 743*
 Block Systems, *R 408*
 BlownUpMat, *R 236*
 BlownUpVector, *R 236*
 BlowUpIsomorphism, *R 431*
 BNF, *R 59*
 body, *R 55*
 BombieriNorm, *R 679*
 Boolean Lists Representing Subsets, *R 211*
 bound, *R 43*
 Brauer character, *R 777*
 BrauerCharacterValue, *R 800*
 BrauerTable, *R 728*
 BrauerTableOp, *R 728*
 BravaisGroup, *R 434*
 BravaisSubgroups, *R 434*
 BravaisSupergroups, *R 434*
 Break, *R 55*
 break loop message, *R 70*
 Break Loops, *R 67*
 break loops, *T 20*
 break statement, *R 55*
 browsing backwards, *R 22*
 browsing backwards one chapter, *R 23*
 browsing forward, *R 22*
 browsing forward one chapter, *R 23*
 browsing the next section browsed, *R 23*
 browsing the previous section browsed, *R 23*
 Browsing through the Sections, *R 22*
 bug reports, see If Things Go Wrong, *R 838*

Building new orderings, *R* 281
 buildman.pe, *E* 27

C

C, Category mark-up, *E* 16
 c_N , *R* 161
 Calculating with Group Automorphisms, *R* 393
 Calendar Arithmetic, *R* 259
 CallFuncList, *R* 62
 Calling a function with a list argument that is interpreted as several arguments, *R* 62
 Calling of and Communication with External Binaries, *E* 39
 Cancellation Tests for Rational Functions, *R* 691
 CanComputeIndex, *R* 384
 CanComputeIsSubset, *R* 384
 CanComputeSize, *R* 384
 CanComputeSizeAnySubgroup, *R* 384
 candidates, for permutation characters, *R* 793
 CanEasilyCompareElements, *R* 296
 CanEasilyCompareElementsFamily, *R* 296
 CanEasilyComputePcgs, *R* 437
 CanEasilySortElements, *R* 296
 CanEasilySortElementsFamily, *R* 296
 CanEasilyTestMembership, *R* 384
 CanonicalBasis, *R* 602
 canonical basis, for matrix spaces, *R* 609
 for row spaces, *R* 609
 CanonicalElt, *N* 14
 CanonicalGenerators, *R* 648
 CanonicalPcElement, *R* 439
 CanonicalPcgs, *R* 442
 CanonicalPcgsByGeneratorsWithImages, *R* 444
 CanonicalRepresentativeDeterminatorOf-ExternalSet, *R* 411
 CanonicalRepresentativeOfExternalSet, *R* 411
 CanonicalRightCosetElement, *R* 358
 Carmichael's lambda function, *R* 139
 carriage return character, *R* 252
 CartanMatrix, *R* 647
 CartanSubalgebra, *R* 644
 Cartesian, *R* 202
 Categories, *R* 118
 Categories and Properties of Algebras, *R* 622
 Categories for Streams and the StreamsFamily, *R* 97
 Categories of Associative Words, *R* 331
 Categories of Matrices, *R* 223
 CategoriesOfObject, *R* 120

Categories of Words and Nonassociative Words, *R* 326
 CategoryCollections, *P* 16, *R* 269
 CategoryFamily, *P* 16
 Catering for Plain Text and HTML Formats, *E* 25
 Center, *R* 324
 center, *R* 323
 CentralCharacter, *R* 781
 central character, *R* 781
 CentralIdempotentsOfAlgebra, *R* 627
 centraliser, *R* 323
 Centralizer, *R* 323
 for groups with pcgs, *R* 451
 CentralizerInGLnZ, *R* 434
 CentralizerModulo, *R* 373
 CentralizerSizeLimitConsiderFunction, *R* 452
 CentralNormalSeriesByPcgs, *R* 446
 Centre, *R* 324
 for groups with pcgs, *R* 451
 centre, of a character, *R* 780
 CentreOfCharacter, *R* 780
 CF, *R* 592
 ChainHomomorphicImage, *N* 20
 ChainStatistics, *N* 20
 ChainSubgroup, *N* 19
 ChainSubgroupByDirectProduct, *N* 21
 ChainSubgroupByHomomorphism, *N* 21
 ChainSubgroupByProjectionFunction, *N* 21
 ChainSubgroupByPSubgroupOfAbelian, *N* 21
 ChainSubgroupBySiftFunction, *N* 21
 ChainSubgroupByStabiliser, *N* 20
 ChainSubgroupByTrivialSubgroup, *N* 21
 ChainSubgroupQuotient, *N* 21
 ChangedBaseGroup, *N* 20
 Changed Command Line Options, *T* 77
 Changed Functionality, *T* 78
 Changed Variable Names, *T* 79
 Changes from Earlier Versions, *T* 13
 ChangeStabChain, *R* 426
 Changing Presentations, *R* 490
 Changing the Help Viewer, *R* 23
 Changing the Representation, *R* 290
 Changing the Structure, *R* 289, *T* 70
 Chapters and Sections, *E* 15
 CHAR.INT, *R* 258
 CHAR.SINT, *R* 258
 Character, *R* 775
 Character Conversion, *R* 258

- CharacterDegrees, R 734
- Character Degrees and Derived Length, *R 825*
- Characteristic, R 293
- characteristic, for class functions, R 774
- CharacteristicPolynomial, R 235
- characteristic polynomial, for field elements, R 581
- CharacterNames, R 738
- CharacterParameters, R 739
- characters, R 768
 - permutation, R 793
 - symmetrizations of, R 790
- CharacterTable, R 728
- Character Table Categories, *R 730*
- CharacterTableDirectProduct, R 758
- CharacterTableFactorGroup, R 759
- CharacterTableIsoclinic, R 760
- CharacterTableRegular, R 729
- character tables, R 727
 - access to, R 727
 - calculate, R 727
 - infix operators, R 734
 - of groups, R 727
- CharacterTableWithSortedCharacters, R 761
- CharacterTableWithSortedClasses, R 762
- CharacterTableWreathSymmetric, R 760
- character value, of group element using powering operator, R 773
- CharsFamily, R 254
- CharTable, T 79
- CheapFactorsInt, R 134
- CheckFixedPoints, R 814
- CheckForHandlingByNiceBasis, R 614
- CheckPermChar, R 821
- ChevalleyBasis, R 646
- ChiefNormalSeriesByPcgs, R 447
- ChiefSeries, R 370
- ChiefSeriesThrough, R 370
- ChiefSeriesUnderAction, R 370
- ChineseRem, R 130
- Chinese remainder, R 131
- Chomp, R 257
- CIUnivPols, R 671
- ClassElementLattice, R 375
- classes, real, R 740
- ClassesSolvableGroup, R 451
- ClassFunction, R 775
- class function, R 768
- class function objects, R 768
- class functions, R 811
 - as ring elements, R 772
- ClassFunctionSameType, R 776
- Class Fusions between Character Tables, *R 806*
- Classical Groups, *R 513*
- ClassMultiplicationCoefficient, for character tables, R 747
- class multiplication coefficient, R 747
- ClassNames, R 738
- ClassNamesTom, R 710
- ClassOrbit, R 740
- ClassParameters, R 739
- ClassPermutation, R 762
- ClassPositionsOfAgemo, R 740
- ClassPositionsOfCentre, for characters, R 780
 - for character tables, R 740
- ClassPositionsOfDerivedSubgroup, R 741
- ClassPositionsOfDirectProduct-
Decompositions, R 741
- ClassPositionsOfElementaryAbelianSeries,
R 741
- ClassPositionsOfFittingSubgroup, R 741
- ClassPositionsOfKernel, R 779
- ClassPositionsOfLowerCentralSeries, R 741
- ClassPositionsOfMaximalNormalSubgroups,
R 740
- ClassPositionsOfMinimalNormalSubgroups,
R 740
- ClassPositionsOfNormalClosure, R 741
- ClassPositionsOfNormalSubgroup, R 766
- ClassPositionsOfNormalSubgroups, R 740
- ClassPositionsOfSupersolvableResiduum, R 741
- ClassPositionsOfUpperCentralSeries, R 741
- ClassRoots, R 740
- ClassStructureCharTable, R 747
- ClassTypesTom, R 709
- CleanedTailPcElement, R 440
- ClearCacheStats, R 84
- ClearProfile, R 83
- clone, an object, R 113
- CloseMutableBasis, R 607
- CloseStream, R 98
- ClosureGroup, R 354
- ClosureGroupAddElm, R 354
- ClosureGroupCompare, R 354
- ClosureGroupDefault, R 354
- ClosureGroupIntest, R 354
- ClosureLeftModule, R 575

- ClosureNearAdditiveGroup, R 561
- Closure Operations and Other Constructors, *R 317*
- ClosureRing, R 563
- Closures of (Sub)groups, *R 354*
- ClosureSomething, T 70
- ClosureStruct, R 289
- ClosureSubgroup, R 354
- ClosureSubgroupNC, R 354
- Coboundaries, R 657
- Cochain, R 656
- CochainSpace, R 656
- Cocycles, R 657
- cocycles, R 380
- CodePcGroup, R 462
- CodePcgs, R 462
- Coding a Pc Presentation, *R 462*
- coefficient, binomial, R 147
- Coefficient List Arithmetic, *R 218*
- Coefficients, R 603
- coefficients, for cyclotomics, R 159
- CoefficientsAndMagmaElements, R 665
- CoefficientsFamily, R 688
- CoefficientsMultiadic, R 130
- CoefficientsOfLaurentPolynomial, R 680
- CoefficientsOfUnivariatePolynomial, R 673
- CoefficientsOfUnivariateRationalFunction, R 673
- CoefficientsQadic, R 130
- CoefficientsRing, R 681
- CoeffsCyc, R 159
- CoeffsMod, R 219
- cohomology, R 380
- COHORTS_PRIMITIVE_GROUPS, R 528
- cokernel, T 55
- CoKernelOfAdditiveGeneralMapping, R 312
- CoKernelOfMultiplicativeGeneralMapping, R 311
- CollapsedMat, R 817
- Collected, R 200
- Collection Families, *R 268*
- CollectionsFamily, P 20, R 268
- Coloring the Prompt and Input, *R 38*
- ColorPrompt, R 38
- ColumnIndexOfReesMatrixSemigroupElement, R 545
- ColumnIndexOfReesZeroMatrixSemigroupElement, R 545
- Combinations, R 149
- Combinations, Arrangements and Tuples, *R 149*
- CombinatorialCollector, R 456
- Combinatorial Numbers, *R 147*
- Comm, R 297
 - for words, R 335
- Command Line Options, *R 27*
- command mark-up, E 16
- comments, R 41, T 19
- CommutativeDiagram, R 814
- CommutatorFactorGroup, R 373
- CommutatorLength, R 364
 - for character tables, R 736
- CommutatorSubgroup, R 363
- Compacted, R 199
- CompanionMat, R 237
- CompareVersionNumbers, R 849
- comparison, fp semigroup elements, R 551
 - operation, R 296
 - rational functions, R 671
- Comparison of Associative Words, *R 334*
- Comparison of Class Functions, *R 771*
- Comparison of Elements of Finitely Presented Groups, *R 465*
- Comparison of Elements of Finitely Presented Semigroups, *R 551*
- Comparison of Permutations, *R 413*
- Comparison of Rational Functions, *R 671*
- Comparison of Words, *R 328*
- Comparison Operations for Elements, *R 296*
- Comparisons, *R 47*
- comparisons, of booleans, R 170
 - of lists, R 184
- Comparisons of Booleans, *R 170*
- Comparisons of Cyclotomics, *R 161*
- Comparisons of Lists, *R 184*
- Comparisons of Records, *R 265*
- Comparisons of Strings, *R 254*
- Compatibility Mode, *T 87*
- Compatibility of Residue Class Rings with Prime Fields, *P 57*
- CompatibleConjugacyClasses, R 733
- CompatiblePairs, R 460
- Compilation, *R 833*
- Compiling Library Code, *R 36*
- Complementclasses, R 363
- ComplementclassesEA, R 382
- ComplementIntMat, R 242
- ComplementSystem, R 366

- CompleteSchreierTransversal, N 17
- Completion Files, *R 34*
- ComplexConjugate, R 164
 - for class functions, R 774
- ComplexificationQuat, R 619
- Component Objects, *P 21*
- Components of a Dixon Record, *R 756*
- Components versus Attributes, *P 40*
- CompositionMapping, R 305
 - for Frobenius automorphisms, R 589
- CompositionMapping2, R 305
- CompositionMaps, R 811
- CompositionOfStraightLinePrograms, R 342
- CompositionSeries, R 370
 - for groups with pcgs, R 451
- ComputedBrauerTables, R 728
- ComputedClassFusions, R 807
- ComputedIndicators, R 746
- ComputedIsPSolvableCharacterTables, R 746
- ComputedPowerMaps, R 803
- ComputedPrimeBlockss, R 742
- Computing a Pcg, *R 437*
- Computing a Permutation Representation, *R 417*
- Computing Pc Groups, *R 457*
- Computing Possible Permutation Characters, *R 796*
- Computing the Irreducible Characters of a Group, *R 751*
- Concatenation, R 199
- concatenation, of lists, R 199
- Conductor, R 159
- ConfluentRws, R 346
- Congruences, for character tables, R 819
- Congruences for semigroups, *R 542*
- ConjugacyClass, R 360
- Conjugacy Classes, *R 360*
- ConjugacyClasses, attribute, R 360
 - for character tables, R 732
 - for groups with pcgs, R 451
 - for linear groups, R 517
- ConjugacyClassesByOrbits, R 361
- ConjugacyClassesByRandomSearch, R 361
- Conjugacy Classes in Classical Groups, *R 517*
- Conjugacy Classes in Solvable Groups, *R 451*
- ConjugacyClassesMaximalSubgroups, R 374
- ConjugacyClassesPerfectSubgroups, R 377
- ConjugacyClassesSubgroups, R 374
- ConjugacyClassSubgroups, R 374
- conjugate, matrix, R 225
 - of a word, R 335
- ConjugateDominantWeight, R 649
- ConjugateDominantWeightWithWord, R 649
- ConjugateGroup, R 351
- Conjugates, R 582
- ConjugateSubgroup, R 353
- ConjugateSubgroups, R 353
- conjugation, R 398
- ConjugatorAutomorphism, R 391
- ConjugatorAutomorphismNC, R 391
- ConjugatorIsomorphism, R 390
- ConjugatorOfConjugatorIsomorphism, R 391
- ConnectGroupAndCharacterTable, R 732
- ConsiderKernels, R 819
- ConsiderSmallerPowerMaps, R 820
- ConsiderStructureConstants, R 811
- ConsiderTableAutomorphisms, R 822
- constants, T 21
- ConstantTimeAccessList, R 195
- constituent, of a group character, R 778
- ConstituentsCompositionMapping, R 306
- ConstituentsOfCharacter, R 779
- Constructing Algebras as Free Algebras, *R 616*
- Constructing Algebras by Generators, *R 615*
- Constructing Algebras by Structure Constants, *R 617*
- Constructing Character Tables from Others, *R 758*
- Constructing Domains, *R 288*
- Constructing Lie algebras, *R 641*
- Constructing Pc Groups, *R 455*
- Constructing Subdomains, *R 292*
- Constructing Tables of Marks, *R 704*
- Constructing Vector Spaces, *R 599*
- Construction of Abelian Number Fields, *R 592*
- Construction of Stabilizer Chains, *R 422*
- Constructors for Basic Groups, *R 517*
- ContainedCharacters, R 818
- ContainedDecomposables, R 818
- ContainedMaps, R 813
- ContainedPossibleCharacters, R 816
- ContainedPossibleVirtualCharacters, R 817
- ContainedSpecialVectors, R 817
- ContainedTom, R 714
- ContainingTom, R 714
- continuation, E 24
- ContinuedFractionApproximationOfRoot, R 143
- ContinuedFractionExpansionOfRoot, R 143
- Continued Fractions, *R 143*

- continue statement, R 55
 - Conventions for Character Tables, R 731
 - convert, to a string, R 253
 - Converting Groups to Finitely Presented Groups, R 473
 - ConvertToCharacterTable, R 730
 - ConvertToCharacterTableNC, R 730
 - ConvertToMatrixRep, R 237
 - ConvertToMatrixRepNC, R 237
 - ConvertToRangeRep, R 209
 - ConvertToStringRep, R 253
 - ConvertToTableOfMarks, R 708
 - ConvertToVectorRep, R 217
 - ConvertToVectorRepNC, R 217
 - ConwayPolynomial, R 589
 - Conway Polynomials, R 589
 - coprime, R 48
 - Copy, T 80
 - copy, R 113
 - an object, R 113
 - COPY_LIST_ENTRIES, R 179
 - Copying Weak Pointer Objects, E 53
 - CopyOptionsDefaults, R 426
 - Copyrights, R 845
 - CopyStabChain, R 426
 - Core, R 362
 - CorrespondingGeneratorsByModuloPcgs, R 444
 - coset, R 357
 - CosetLeadersMatFFE, R 220
 - Cosets, R 357
 - CosetTable, R 467
 - CosetTableBySubgroup, R 468
 - CosetTableDefaultLimit, R 469
 - CosetTableDefaultMaxLimit, R 469
 - CosetTableFromGensAndRels, R 468
 - CosetTableInWholeGroup, R 471
 - CosetTableOfFpSemigroup, R 554
 - Coset Tables and Coset Enumeration, R 467
 - Coset tables for subgroups in the whole group, R 471
 - CosetTableStandard, R 470
 - CRC, R 37
 - CrcFile, R 95
 - example, R 37
 - CRC Numbers, R 37
 - CreateCompletionFiles, R 34
 - CreateCompletionFilesPackage, E 40
 - CreateCompletionFilesPkg, R 850
 - Creating Attributes and Properties, P 17
 - Creating Categories, P 16
 - Creating Character Tables, R 727
 - Creating Class Functions from Values Lists, R 775
 - Creating Class Functions using Groups, R 776
 - Creating Families, P 18
 - Creating Finite Fields, R 587
 - Creating Finitely Presented Groups, R 464
 - Creating Finitely Presented Semigroups, R 550
 - Creating Group Homomorphisms, R 385
 - Creating Groups, R 350
 - Creating hom cosets and quotient groups, N 14
 - Creating Mappings, R 305
 - Creating Objects, P 20
 - Creating Operations, P 18
 - Creating Other Filters, P 18
 - Creating Own Arithmetic Objects, P 42
 - Creating Permutations, R 415
 - Creating Presentations, R 482
 - Creating Representations, P 17
 - Creating Types, P 20
 - Creation of Algebraic Extensions, R 692
 - Creation of Rational Functions, R 690
 - Credit, R 21
 - CrystGroupDefaultAction, R 435
 - Cycle, R 406
 - CycleLength, R 406
 - CycleLengths, R 406
 - Cycles, R 406
 - CycleStructureClass, R 780
 - CycleStructurePerm, R 414
 - CyclicExtensionsTom, R 714
 - CyclicGroup, R 511
 - CyclotomicField, R 592
 - cyclotomic field elements, R 157
 - cyclotomic fields, canonicalbasis, R 595
 - CyclotomicPolynomial, R 677
 - Cyclotomic Polynomials, R 677
 - Cyclotomics, R 157
 - cyclotomics, defaultfield, R 593
- ## D
- d_N , R 161
 - Darstellungsgruppe, see EpimorphismSchurCover, R 383
 - DataType, R 125
 - data type, unknown, R 168
 - DayDMY, R 260
 - DaysInMonth, R 259

- DaysInYear, R 259
- Debugging, *T* 86
- Debugging Recursion, *R* 85
- DEC, R 245
- Declaration and Implementation Part, *E* 38, *P* 33
- DeclareAttribute, P 31
 - example, P 42
- DeclareAutoPackage, R 850
- DeclareAutoreadableVariables, *E* 40
- DeclareAutoreadableVariables, *E* 40
- DeclareCategory, P 31
- DeclareFilter, P 31
- DeclareGlobalFunction, P 32
- DeclareGlobalVariable, P 32
- DeclareHandlingByNiceBasis, R 613
- DeclareInfoClass, R 80
- DeclareOperation, P 32
- DeclarePackage, R 850
- DeclarePackageAutoDocumentation, R 850
- DeclarePackageDocumentation, R 850
- DeclareProperty, P 31
- DeclareRepresentation, P 31
 - belongs to implementation part, P 33
 - example, P 39
- DeclareSynonym, P 32
- DeclareSynonymAttr, P 33
- DecodeTree, R 500
- DecodeTree, *R* 500
- decompose, a group character, R 778
- DecomposedFixedPointVector, R 714
- DecomposeTensorProduct, R 658
- Decomposition, R 245
- DecompositionInt, R 246
- DecompositionMatrix, R 744
- decomposition matrix, R 245
- Decompositions, *R* 245
- Decreased, R 787
- DefaultField, R 579
 - for cyclotomics, R 160
 - for finite field elements, R 587
- DefaultFieldByGenerators, R 579
- DefaultFieldOfMatrix, R 226
- DefaultFieldOfMatrixGroup, R 430
- DefaultRing, R 562
 - for finite field elements, R 587
- DefaultRingByGenerators, R 563
- DefaultStabChainOptions, R 423
- Defining a Pcgs Yourself, *R* 437
- DefiningPolynomial, R 580
- DefiningQuotientHomomorphism, R 477
- DegreeFFE, R 586
- DegreeIndeterminate, R 675
- DegreeOfBinaryRelation, R 316
- DegreeOfCharacter, R 778
- DegreeOfLaurentPolynomial, R 674
- DegreeOfTransformation, R 555
- DegreeOfTransformationSemigroup, R 541
- DegreeOverPrimeField, R 580
- Delta, R 825
- Denominator, *T* 79
 - denominator, of a rational, R 146
- DenominatorCyc, R 160
- DenominatorOfModuloPcgs, R 443
- DenominatorOfRationalFunction, R 673
- DenominatorRat, R 146
- DenseHashTable, *N* 11
- Dense hash tables, *N* 11
- DenseIntKey, *N* 11
- deprecated, R 850
- DepthOfPcElement, R 439
- DepthOfUpperTriangularMatrix, R 235
- DepthVector, *T* 79
- Derangements, R 151
- Derivations, R 642
- Derivative, R 676
- DerivedLength, R 371
- DerivedSeriesOfGroup, R 371
- DerivedSubgroup, R 363
- DerivedSubgroupsTom, R 713
- DerivedSubgroupsTomPossible, R 713
- DerivedSubgroupsTomUnique, R 713
- DerivedSubgroupTom, R 713
- DescriptionOfRootOfUnity, R 160
- Designing new Multiplicative Objects, *P* 65
- Determinant, R 227
 - determinant character, R 781
- DeterminantIntMat, R 245
- DeterminantMat, R 227
- DeterminantMatDestructive, R 227
- DeterminantMatDivFree, R 227
- Determinant of an integer matrix, *R* 245
- DeterminantOfCharacter, R 781
- Developing rewriting systems, *R* 348
- DiagonalizeIntMat, R 243
- DiagonalizeMat, R 232
- DiagonalMat, R 228

- DiagonalOfMat, R 235
- Dictionaries, *N* 9
- DictionaryByPosition, *N* 10
- Difference, R 276
- DifferenceBlist, R 212
- Different Notions of Generation, *T* 81
- DihedralGroup, R 512
- Dimension, R 576
- DimensionOfHighestWeightModule, R 658
- DimensionOfMatrixGroup, R 430
- DimensionOfVectors, R 608
- DimensionsLoewyFactors, R 372
- DimensionsMat, R 226
- Directories, *R* 91
- DirectoriesLibrary, R 91
- DirectoriesPackageLibrary, R 848
- DirectoriesPackagePrograms, R 849
- DirectoriesSystemPrograms, R 92
- Directory, R 91
- DirectoryContents, R 92
- DirectoryCurrent, R 91
- DirectoryTemporary, R 91
- DirectProduct, R 505
- Direct product chain subgroups, *N* 21
- DirectProductOp, R 505
- Direct Products, *R* 505
- DirectSumDecomposition, R 627
 - for Lie algebras, R 646
- Direct Sum Decompositions, *R* 646
- DirectSumOfAlgebraModules, R 638
 - for Lie algebras, R 661
- DirectSumOfAlgebras, R 626
- DisableAttributeValueStoring, R 123
- disable automatic loading, R 846
- Discriminant, R 676
- Display, R 67
 - for character tables, R 748
 - for tables of marks, R 706
- DisplayCacheStats, R 84
- DisplayCompositionSeries, R 370
- DisplayEggBoxOfDCClass, R 543
- DisplayImfInvariants, R 532
- DisplayInformationPerfectGroups, R 525
- DisplayOptions, R 750
- DisplayOptionsStack, R 89
- DisplayProfile, R 83
- DisplayRevision, R 84
- DistancesDistributionMatFFeVecFFE, R 220
- DistancesDistributionVecFFesVecFFE, R 220
- DistanceVecFFE, R 220
- Distinguished Subalgebras, *R* 643
- division, R 48
 - operation, R 297
- DivisionRingByGenerators, R 579
- division rings, R 578
- divisors, of an integer, R 134
- DivisorsInt, R 134
- Dixon-Schneider algorithm, R 754
- DixonInit, R 755
- DixonRecord, R 755
- DixonSplit, R 755
- DixontinI, R 755
- DMYDay, R 260
- DMYhmsSeconds, R 261
- DnLattice, R 788
- DnLatticeIterative, R 789
- do, R 53
- document formats, for help books, *E* 43
- document formats (text, dvi, ps, pdf, html), *R* 23
- Domain, R 293
- DomainByGenerators, R 293
- Domain Categories, *R* 290
- Domain Constructors, *T* 70
- Domains, *R* 110
- Domains as Sets, *T* 68
- Domains Generated by Class Functions, *R* 801
- Domains of Subspaces of Vector Spaces, *R* 601
- DominantCharacter, R 657
- DominantWeights, R 657
- DoubleCoset, R 359
- DoubleCosetRepsAndSizes, R 360
- Double Cosets, *R* 359
- DoubleCosets, operation, R 359
- DoubleCosetsNC, operation, R 359
- DoubleHashArraySize, *N* 11
- doublequote character, R 252
- doublequotes, R 250
- DownEnv, R 71, *T* 86
- Dummy Streams, *R* 106
- duplicate free, R 195
- DuplicateFreeList, R 200
- Duplication of Lists, *R* 181
- Duplication of Objects, *R* 113
- DxIncludeIrreducibles, R 755

E

- E, R 157
- e_N , R 161
- EANormalSeriesByPcgs, R 445
- Earns, R 407
- EB, R 161
- EC, R 161
- Echelonized Matrices, R 232
- ED, R 161
- Edit, R 75
- Editing Files, R 75
- Editor Support, R 75
- EE, R 161
- EF, R 161
- Efficiency of Homomorphisms, R 388
- EG, R 161
- EggBoxOfDClass, R 543
- EH, R 161
- EI, R 162
- Eigenspaces, R 231
- Eigenvalues, R 231
- EigenvaluesChar, R 781
- Eigenvectors, R 231
- Eigenvectors and eigenvalues, R 231
- EJ, R 162
- EK, R 162
- EL, R 162
- ElementaryAbelianGroup, R 512
- ElementaryAbelianSeries, R 371
- ElementaryAbelianSeriesLargeSteps, R 371
- Elementary Divisors, R 232
- ElementaryDivisorsMat, R 232
- ElementaryDivisorsMatDestructive, R 232
- Elementary Operations for a Pcgs, R 438
- Elementary Operations for a Pcgs and an Element, R 439
- Elementary Operations for Integers, R 127
- Elementary Operations for Rationals, R 145
- Elementary Tietze Transformations, R 493
- ElementOffFpGroup, R 466
- ElementOffFpSemigroup, R 552
- ElementOfMagmaRing, R 665
- ElementOrdersPowerMap, R 804
- ElementProperty, R 427
- Elements, R 273, T 79
 - elements, T 24
 - definition, R 109
 - of a list or collection, R 273
- Elements as equivalence classes, R 109
- ElementsFamily, P 20, R 268
- Elements in Algebraic Extensions, R 692
- Elements of Finitely Presented Groups, T 84
- Elements of Free Magma Rings, R 665
- Elements of pc groups, R 454
- ElementsStabChain, R 425
- Elements with Prescribed Images, R 403
- element test, for lists, R 183
- elif, R 51
- EliminatedWord, R 336
- EliminationOrdering, R 685
- ElmWPObj, E 52
- else, R 51
- EM, R 162
- emacs, R 75
- email addresses, T 16
- Embedding, R 306
 - example for direct products, R 505
 - example for semidirect products, R 507
 - example for wreath products, R 508
 - for group products, R 510
 - for Lie algebras, R 641
 - for magma rings, R 665
- embeddings, find all, R 394
- Embeddings and Projections for Group Products, R 510
- EmptyBinaryRelation, R 315
- EmptyMatrix, R 228
- EmptyPlist, R 183
- EmptySCTable, R 617
- EmptyStabChain, R 426
- EmptyString, R 253
- EnableAttributeValueStoring, R 123
- End, R 611
- end, R 55
- Enforcing Property Tests, P 37
- Enlarging Internally Represented Lists, R 183
- Enumerator, R 269
- enumerator, T 49
- EnumeratorByBasis, R 604
- EnumeratorByFunctions, R 270
- Enumerators, R 209
- EnumeratorSorted, R 269
- environment, R 55
- Epicentre, R 383
- EpimorphismFromFreeGroup, R 354
- EpimorphismNilpotentQuotient, R 478
- EpimorphismNonabelianExteriorSquare, R 383

- EpimorphismPGroup, R 478
- EpimorphismQuotientSystem, R 478
- epimorphisms, find all, R 394
- EpimorphismSchurCover, R 383
- equality, associative words, R 334
 - elements of finitely presented groups, R 465
 - nonassociative words, R 328
 - of records, R 265
 - operation, R 296
 - pcwords, R 454
- Equality and Comparison of Domains, R 288
- equality test, R 47
 - for permutations, R 413
- equivalence class, R 319
- Equivalence Classes, R 319
- EquivalenceClasses, attribute, R 319
- EquivalenceClassOfElement, R 319
- EquivalenceClassOfElementNC, R 319
- EquivalenceClassRelation, R 319
- equivalence relation, R 318
- EquivalenceRelationByPairs, R 318
- EquivalenceRelationByPairsNC, R 318
- EquivalenceRelationByPartition, R 318
- EquivalenceRelationByPartitionNC, R 318
- EquivalenceRelationByProperty, R 318
- EquivalenceRelationByRelation, R 318
- EquivalenceRelationPartition, R 318
- Equivalence Relations, R 318
- ER, R 162
- Error, R 73
- Error, R 73
- ErrorCount, R 73
- ErrorCount, R 73
- ErrorNoTraceBack, R 69
- errors, syntax, R 64
- ES, R 162
- escaped characters, R 252
- escaping non-special characters, R 252
- ET, R 162
- EU, R 162
- EuclideanDegree, R 570
- EuclideanQuotient, R 570
- EuclideanRemainder, R 571
- Euclidean Rings, R 570
- Euler's totient function, R 138
- EulerianFunction, R 369
- EulerianFunctionByTom, R 715
- EV, R 162
- EvalStraightLineProgElm, R 344
- EvalString, R 259
- evaluation, R 42
 - strings, R 258
- EW, R 162
- EX, R 162
- ExactSizeConsiderFunction, R 379
- Example – Constructing Enumerators, P 24
- Example – Constructing Iterators, P 26
- Example: Groups with a decomposition as semidirect product, P 42
- Example: Groups with a word length, P 42
- Example: M-groups, P 41
- Examples, Lists, and Verbatim, E 20
- Exec, R 108
- Exec, R 108
- execution, R 49
- exit, R 73
- expanded form of monomials, R 689
- Expert Windows installation, R 844
- Exponent, R 369
 - for character tables, R 736
- exponent, of the prime residue group, R 139
- exponentiation, operation, R 297
- ExponentOfPcElement, R 439
- ExponentsConjugateLayer, R 440
- ExponentsOfCommutator, R 440
- ExponentsOfConjugate, R 440
- ExponentsOfPcElement, R 439
- ExponentsOfRelativePower, R 440
- Exponents of Special Products, R 440
- ExponentSumWord, R 335
- ExponentSyllable, R 337
- Expressing Group Elements as Words in Generators, R 354
- Expressions, R 42
- ExtendedGroup, N 20
- ExtendedPcgs, R 442
- Extending the Range of Definition of an Existing Operation, P 36
- ExtendSchreierTransversal, N 17
- ExtendSchreierTransversalShortCube, N 17
- ExtendSchreierTransversalShortTree, N 17
- ExtendStabChain, R 426
- Extension, R 459
- ExtensionNC, R 459
- ExtensionRepresentatives, R 460
- Extensions, R 459

- Extensions of the p-adic Numbers, *R 695*
- ExteriorCentre, *R 383*
- ExteriorPowerOfAlgebraModule, *R 661*
- ExternalOrbit, *R 410*
- ExternalOrbits, *R 410*
- ExternalOrbitsStabilizers, *R 410*
- External Representation, *P 28*
- External Representation for Nonassociative Words,
R 330
- external representation of polynomials, *R 689*
- ExternalSet, *E 48, R 409*
- external set, *T 48*
- External Sets, *R 409*
- ExternalSubset, *R 410*
- Extract, *R 785*
- ExtraspecialGroup, *R 512*
- ExtRepDenominatorRatFun, *R 689*
- ExtRepNumeratorRatFun, *R 689*
- ExtRepOfObj, *P 29*
- external representation, for cyclotomics, *R 160*
- ExtRepPolynomialRatFun, *R 689*
- EY, *R 162*
- F**
- F, Function mark-up, *E 16*
- f_N , *R 161*
- FactorCosetAction, *R 405*
- for fp groups, *R 468*
- FactorCosetOperation, *R 468*
- FactorFreeSemigroupByRelations, *R 550*
- FactorGroup, *R 373*
- FactorGroupFpGroupByRels, *R 464*
- FactorGroupNC, *R 373*
- FactorGroupNormalSubgroupClasses, *R 766*
- Factor Groups, *R 373*
- Factor Groups of Polycyclic Groups - Modulo PcgS,
R 443
- Factor Groups of Polycyclic Groups in their Own
Representation, *R 444*
- FactorGroupTom, *R 715*
- Factorial, *R 147*
- Factorization, *R 355*
- factorization, *R 354*
- Factors, *R 570*
- of univariate polynomial, *R 678*
- FactorsInt, *R 132*
- FactorsOfDirectProduct, *R 759*
- FactorsSquarefree, *R 678*
- Fail, *R 170, T 77*
- fail, *R 170*
- fail instead of false, *T 77*
- FaithfulModule, *R 637*
- for Lie algebras, *R 655*
- Families, *R 116*
- FamiliesOfGeneralMappingsAndRanges, *R 314*
- FamiliesOfRows, *R 765*
- family, *T 31*
- FamilyForOrdering, *R 282*
- FamilyObj, *R 116*
- FamilyPcgs, *R 454*
- FamilyRange, *R 314*
- FamilySource, *R 314*
- FAQ, *R 837*
- Fast access to last hash index, *N 12*
- features, under UNIX, *R 27*
- fi, *R 51*
- Fibonacci, *R 155*
- Fibonacci and Lucas Sequences, *R 155*
- Field, *R 578*
- FieldExtension, *R 580*
- field homomorphisms, Frobenius, *R 589*
- FieldOfMatrixGroup, *R 430*
- FieldOverItselfByGenerators, *R 580*
- fields, *R 578*
- File Access, *R 93*
- FileDescriptorOfStream, *R 98*
- Filename, *R 92*
- Filename, *R 92*
- File Operations, *R 94*
- File Streams, *R 103*
- File Structure, *E 32*
- File Types, *E 32*
- Filtered, *R 203*
- Filters, *R 117*
- filters, *T 73*
- Filters Controlling the Arithmetic Behaviour of
Lists, *R 185*
- Finding Implementations in the Library, *E 33*
- Finding Positions in Lists, *R 191*
- Finding Submodules, *R 698*
- FindS12, *R 653*
- Finish Installation and Cleanup, *R 835*
- Finite Field Elements, *R 584*
- Finitely Presented Lie Algebras, *R 653*
- Finitely presented monoids, *R 552*
- finiteness test, for a list or collection, *R 273*

- Finite Perfect Groups, *R 523*
- First, *R 204*
- FittingSubgroup, *R 364*
- Flat, *R 200*
- FlushCaches, *P 33*
- flush character, *R 252*
- foa triples, *E 46*
- For, *R 53*
- ForAll, *R 204*
- For and While Loops, *T 33*
- ForAny, *R 204*
- for loop, *R 53*
- Forming Closures of Domains, *T 70*
- FpElmComparisonMethod, *R 465*
- FpGroupPresentation, *R 483*
- FpGrpMonSmgOfFpGrpMonSmgElement, *R 550*
- FpLieAlgebraByCartanMatrix, *R 654*
- frame, *R 791*
- FrattniniSubgroup, *R 364*
 - for groups with pcgs, *R 451*
- FreeAlgebra, *R 616*
- FreeAlgebraWithOne, *R 616*
- FreeAssociativeAlgebra, *R 616*
- FreeAssociativeAlgebraWithOne, *R 616*
- FreeGeneratorsOfFpGroup, *R 465*
- FreeGeneratorsOfFpSemigroup, *R 551*
- FreeGeneratorsOfWholeGroup, *R 465*
- FreeGroup, *R 332*
- FreeGroupOfFpGroup, *R 465*
- Free Groups, Monoids and Semigroups, *R 332*
- FreeLeftModule, *R 576*
- FreeLieAlgebra, *R 642*
- FreeMagma, *R 329*
- FreeMagmaRing, *R 664*
- Free Magma Rings, *R 664*
- Free Magmas, *R 329*
- FreeMagmaWithOne, *R 329*
- Free Modules, *R 576*
- FreeMonoid, *R 547*
 - with example, *R 332*
- FreeMonoidOfRewritingSystem, *R 554*
- FreeProduct, *R 510*
- Free Products, *R 510*
- FreeSemigroup, *R 332*
 - with examples, *R 540*
- FreeSemigroupOfFpSemigroup, *R 551*
- FreeSemigroupOfRewritingSystem, *R 554*
- Frobenius automorphism, *R 589*
- FrobeniusAutomorphism, *R 589*
- FrobeniusAutomorphism, *R 589*
- FrobeniusCharacterValue, *R 800*
- FullMatrixAlgebra, *R 619*
- FullMatrixAlgebraCentralizer, *R 627*
- FullMatrixLieAlgebra, *R 642*
- FullMatrixModule, *R 577*
- FullMatrixSpace, *R 608*
- FullRowModule, *R 577*
- FullRowSpace, *R 608*
- FullTransformationSemigroup, *R 541*
- Function, *R 55*
- function, *R 55*
- FunctionAction, *R 409*
- function call, *R 46*
 - with arguments, *R 46*
 - with options, *R 47*
- Function Calls, *R 46*
- FunctionOperation, *R 850*
- functions, *R 61*
 - definition by arrow notation, *R 57*
 - definition of, *R 55*
 - recursive, *R 55*
 - with a variable number of arguments, *R 46*
- FunctionsFamily, *R 63*
- Functions for Coding Theory, *R 220*
- Functions for GAP Packages, *R 847*
- Functions that do nothing, *R 63*
- Function that Modify Boolean Lists, *R 213*
- Function Types, *R 63*
- Further Improvements in Implementing Residue Class Rings, *P 62*
- Further Information about Domains, *T 71*
- Further Information about Functions, *T 43*
- Further Information about GAP, *T 16*
- Further Information about Groups and Homomorphisms, *T 58*
- Further Information about Lists, *T 39*
- Further Information about Vector Spaces and Algebras, *T 67*
- Further Information introducing the System, *T 26*
- FusionCharTableTom, *R 721*
- FusionConjugacyClasses, *R 807*
- FusionConjugacyClassesOp, *R 807*
- fusions, *R 806*
- FusionsAllowedByRestrictions, *R 822*
- FusionsTom, *R 710*

G

- G*-sets, E 48, R 409
- g_N , R 161
- gac*, R 35
- Galois Action, *R 580*
- Galois Conjugacy of Cyclotomics, *R 164*
- GaloisCyc, R 164
 - for class functions, R 774
- GaloisField, R 588
- GaloisGroup, of field, R 581
 - of rational class of a group, R 362
- Galois Groups of Abelian Number Fields, *R 597*
- GaloisMat, R 165
- GaloisStabilizer, R 594
- GaloisType, R 679
- gap.rc, R 33
- GAP3, R 34
- Gap3CatalogueIdGroup, R 521
- GAPDocManualLab, E 41
- GAP for Macintosh OS X, *R 841*
- GAP for MacOS, *R 842*
- GAPInfo, R 851
- GAPInfo.RootPaths, R 29
- GAPInfo.Version, E 40
- GapInputPcGroup, R 458
- GapInputSCTable, R 617
- GAPKB_REW, R 553
- gapmacro.tex, E 11
- GAP Root Directory, *R 90*
- GasmanLimits, R 87
- GasmanMessageStatus, R 87
- GasmanStatistics, R 87
- Gaussian algorithm, R 230
- GaussianIntegers, R 598
- GaussianRationals, R 593
- Gaussians, *R 598*
- Gcd, R 571
- Gcd and Lcm, *R 571*
- Gcdex, R 130
- GcdInt, R 129
- GcdOp, R 571
- GcdRepresentation, R 571
- GcdRepresentationOp, R 572
- General Binary Relations, *R 315*
- General hash table definitions and operations, *N 10*
- General Hash Tables, *N 10*
- GeneralisedEigenspaces, R 231
- GeneralisedEigenvalues, R 231
- generalized characters, R 768
- Generalized Conjugation Technique, *E 54*
- generalized conjugation technique, E 54
- GeneralizedEigenspaces, R 231
- GeneralizedEigenvalues, R 231
- GeneralLinearGroup, R 514
- GeneralMappingByElements, R 305
- General Mappings, *R 313*
- GeneralMappingsFamily, R 314
- General operations on transversals, *N 16*
- GeneralOrthogonalGroup, R 515
- GeneralUnitaryGroup, R 514
- Generating Fields, *R 578*
- Generating modules, *R 574*
- Generating Rings, *R 562*
- GeneratingSetIsComplete, N 19
- generator, of the prime residue group, R 140
- GeneratorsOfAdditiveGroup, R 560
- GeneratorsOfAdditiveMagma, R 560
- GeneratorsOfAdditiveMagmaWithZero, R 560
- GeneratorsOfAlgebra, R 623
- GeneratorsOfAlgebraModule, R 634
- GeneratorsOfAlgebraWithOne, R 623
- GeneratorsOfDivisionRing, R 579
- GeneratorsOfDomain, R 293
- GeneratorsOfEquivalenceRelationPartition, R 318
- GeneratorsOfField, R 579
- GeneratorsOfGroup, R 351
- GeneratorsOfIdeal, R 565
- GeneratorsOfLeftIdeal, R 566
- GeneratorsOfLeftModule, R 574
- GeneratorsOfLeftOperatorAdditiveGroup, R 574
- GeneratorsOfLeftVectorSpace, R 600
- GeneratorsOfMagma, R 323
- GeneratorsOfMagmaWithInverses, R 323
- GeneratorsOfMagmaWithOne, R 323
- GeneratorsOfMonoid, R 546
- GeneratorsOfNearAdditiveGroup, R 560
- GeneratorsOfNearAdditiveMagma, R 560
- GeneratorsOfNearAdditiveMagmaWithZero, R 560
- GeneratorsOfPresentation, R 482
- GeneratorsOfRightIdeal, R 566
- GeneratorsOfRightModule, R 575
- GeneratorsOfRightOperatorAdditiveGroup, R 575
- GeneratorsOfRing, R 563
- GeneratorsOfRingWithOne, R 567

- GeneratorsOfRws, R 346
 - GeneratorsOfSemigroup, R 540
 - GeneratorsOfSomething, T 69
 - GeneratorsOfStruct, R 289
 - GeneratorsOfTwoSidedIdeal, R 565
 - GeneratorsOfVectorSpace, R 600
 - GeneratorsPrimeResidues, R 139
 - GeneratorsSmallest, R 380
 - GeneratorsSubgroupsTom, R 719
 - GeneratorSyllable, R 337
 - Generic Construction of Tables of Marks, *R 723*
 - GetFusionMap, R 808
 - GetHashEntry, N 10
 - GetHashEntryAtLastIndex, N 12
 - GetHashEntryIndex, N 11
 - getter, of an attribute, T 72
 - Get the Archives, *R 832*
 - getting help, R 22
 - GF, R 588
 - GL, R 514
 - GL and SL, *R 431*
 - Global Memory Information, *R 87*
 - GlobalMersenneTwister, R 136
 - GlobalRandomSource, R 136
 - Global Variables in the Library, *P 31*
 - GModuleByMats, R 697
 - GO, R 515
 - GQuotients, R 394
 - Grading, R 628
 - Green's Relations, *R 542*
 - GreensDClasses, R 544
 - GreensDClassOfElement, R 543
 - GreensDRelation, R 543
 - GreensHClasses, R 544
 - GreensHClassOfElement, R 543
 - GreensHRelation, R 543
 - GreensJClasses, R 544
 - GreensJClassOfElement, R 543
 - GreensJRelation, R 543
 - GreensLClasses, R 544
 - GreensLClassOfElement, R 543
 - GreensLRelation, R 543
 - GreensRClasses, R 544
 - GreensRClassOfElement, R 543
 - GreensRRelation, R 543
 - Groebner Bases, *R 686*
 - GroebnerBasis, R 686
 - GroebnerBasisNC, R 686
 - Group, R 350
 - group actions, R 397
 - operations syntax, R 397
 - Group Actions - Name Changes, *R 850*
 - group algebra, R 663
 - Group Automorphisms, *R 390*
 - GroupByRws, R 456
 - GroupByRwsNC, R 456
 - group characters, R 768
 - Group Elements, *R 350*
 - group general mapping, T 55
 - single-valued, T 55
 - total, T 55
 - GroupGeneralMappingByImages, R 386
 - GroupHClassOfGreensDClass, R 544
 - GroupHomomorphismByFunction, R 386
 - GroupHomomorphismByImages, R 385
 - GroupHomomorphismByImagesNC, R 385
 - GroupHomomorphismByImages vs. GroupGeneralMappingByImages, T 55
 - Group Homomorphisms, Group Homomorphisms, by Images, *T 54*
 - GroupOfPcgs, R 438
 - group operations, R 398
 - Group Properties, *R 367*
 - GroupRing, R 664
 - group ring, R 663
 - Groups of Automorphisms, *R 392*
 - GroupStabChain, R 425
 - GroupWithGenerators, R 351
 - GU, R 514
- ## H
- h_N , R 161
 - HallSubgroup, R 365
 - HallSystem, R 366
 - for groups with pcgs, R 451
 - Handling of Streams in the Background, *R 106*
 - HasAbelianFactorGroup, R 373
 - HasChainHomomorphicImage, N 20
 - HasElementaryAbelianFactorGroup, R 373
 - HashFunct, N 11
 - HashKeyEnumerator, N 10
 - Hash keys, *N 11*
 - HasIndeterminateName, R 670
 - HasParent, R 291
 - HasseDiagramBinaryRelation, R 317
 - HeadPcElementByNumber, R 440

- Help, *T 25*
- HELP_ADD_BOOK, *E 42*
- HenselBound, *R 679*
- hermite normal form, *R 851*
- HermiteNormalFormIntegerMat, *R 243*
- HermiteNormalFormIntegerMatTransform, *R 243*
- HeuristicCancelPolynomials, *R 691*
- HexStringInt, *R 255*
- HighestWeightModule, *R 660*
- History of Character Theory Stuff in GAP, *R 726*
- HMSMSec, *R 260*
- Hom, *R 611*
- HomCoset, *N 14*
- Hom coset chain subgroups, *N 21*
- HomCosetWithImage, *N 14*
- HomeEnumerator, *R 409*
- Homomorphism, for quotient groups by
 - homomorphisms, *N 14*
 - for subgroup transversals, *N 17*
- homomorphism, action, *T 48*
 - natural, *T 45*
 - operation, *T 48*
- Homomorphism for very large groups, *R 389*
- HomomorphismQuotientSemigroup, *R 542*
- homomorphisms, find all, *R 394*
- homomorphisms, Frobenius, field, *R 589*
- Homomorphisms of Algebras, *R 629*
- Homomorphisms vs. Factor Structures, *T 83*
- Homomorphisms vs. General Mappings, *T 83*
- HomomorphismTransformationSemigroup, *R 541*
- HomTransversal, *N 17*
- How to Implement New Kinds of Vector Spaces, *R 613*
- HumanReadableDefinition, *R 717*
- I**
- i_N , *R 162*
- Ideal, *R 564*
- IdealByGenerators, *R 565*
- IdealNC, *R 565*
- Ideals, *R 621*
- Ideals in Rings, *R 564*
- Ideals of semigroups, *R 541*
- Idempotents, *R 324*
- IdempotentsTom, *R 710*
- IdempotentsTomInfo, *R 710*
- Identical Lists, *R 180, T 29*
- Identical Objects, *R 110*
- Identical Records, *R 264*
- IdentificationOfConjugacyClasses, *R 732*
- Identifier, for character tables, *R 739*
 - for tables of marks, *R 711*
- identifier, *T 22*
- Identifiers, *R 42*
- Identity, *R 293*
- IdentityBinaryRelation, *R 315*
- IdentityFromSCTable, *R 618*
- IdentityMapping, *R 306*
- IdentityMat, *R 228*
- IdentityTransformation, *R 555*
- IdFunc, *R 63*
- IdGap3SolvableGroup, *R 521*
- IdGroup, *R 521*
- IdSmallGroup, *R 521*
- IdsOfAllSmallGroups, *R 521*
- If, *R 51*
- if statement, *R 51*
- If Statements, *T 41*
- If Things Go Wrong, *R 837*
- Image, *R 308*
 - for Frobenius automorphisms, *R 589*
- image, vector under matrix, *R 225*
- ImageElm, *R 308*
- ImageElt, *N 14*
- ImageGroup, *N 18*
- ImageListOfTransformation, *R 556*
- Images, *R 308*
- ImagesElm, *R 307*
- ImageSetOfTransformation, *R 556*
- ImagesRepresentative, *R 307*
- ImagesSet, *R 307*
- ImagesSmallestGenerators, *R 389*
- ImagesSource, *N 15, R 307*
- Images under Mappings, *R 307*
- ImaginaryPart, *R 164*
- ImfInvariants, *R 534*
- ImfMatrixGroup, *R 535*
- ImfNumberQClasses, *R 532*
- ImfNumberQQClasses, *R 532*
- ImfNumberZClasses, *R 532*
- Immediate Methods, *P 13*
- Immutability, *T 30*
- Immutable, *R 112*
- ImmutableBasis, *R 607*
- ImmutableMatrix, *R 237*
- Immutable Objects, *T 80*

- Implementing New List Objects, *P 23*
- in, for collections, R 277
 - for lists, R 183
 - for strictly sorted lists, R 197
 - operation for, R 277
- IndependentGeneratorsOfAbelianGroup, R 380
- Indeterminate, R 669
- IndeterminateName, R 670
- Indeterminateness, R 816
- IndeterminateNumberOfLaurentPolynomial, R 680
- IndeterminateNumberOfUnivariateRationalFunction, R 670
- IndeterminateOfUnivariateRationalFunction, R 670
- Indeterminates, *R 669*
- IndeterminatesOfPolynomialRing, R 681
- Index, R 352
- indexing commands, E 16
- IndexInWholeGroup, R 352
- IndexNC, R 352
- Index numbers of primitive groups, *R 529*
- Indicator, R 746
- IndicatorOp, R 746
- IndicesCentralNormalSteps, R 445
- IndicesChiefNormalSteps, R 446
- IndicesEANormalSteps, R 445
- IndicesInvolutoryGenerators, R 470
- IndicesNormalSteps, R 447
- IndicesOfAdjointBasis, R 624
- IndicesPCentralNormalStepsPGroup, R 446
- IndicesStabChain, R 425
- Indirected, R 812
- Induced Actions, *R 699*
- InducedAutomorphism, R 393
- InducedClassFunction, R 782
- InducedClassFunctions, R 783
- InducedClassFunctionsByFusionMap, R 783
- InducedCyclic, R 783
- InducedPcgs, R 441
- InducedPcgsByGenerators, R 441
- InducedPcgsByGeneratorsNC, R 441
- InducedPcgsByPcSequence, R 441
- InducedPcgsByPcSequenceAndGenerators, R 442
- InducedPcgsByPcSequenceNC, R 441
- InducedPcgsWrtFamilyPcgs, R 454
- InducedPcgsWrtSpecialPcgs, R 449
- Inequalities, R 799
- inequality, of records, R 265
- inequality test, R 47
- InertiaSubgroup, R 780
- Infinity, *R 160*
- infinity, R 160
- inflated class functions, R 782
- Info, R 80
- InfoAlgebra, R 615
- InfoAttributes, R 123
- InfoBckt, R 427
- InfoCharacterTable, R 731
- InfoCoh, R 382
- InfoComplement, R 363
- InfoCoset, R 360
- InfoFpGroup, R 464
- Info Functions, *R 80*
- InfoGroebner, R 687
- InfoGroup, R 351
- InfoLattice, R 377
- InfoLevel, R 80
- InfoMatrix, R 223
- InfoMonomial, R 824
- InfoNumtheor, R 138
- InfoOptions, R 89
- InfoPcSubgroup, R 380
- Information about a function, *R 61*
- Information about the version used, *R 84*
- InfoText, R 739
- InfoTom, R 708
- InfoWarning, R 81
- Init, R 136
- init.g, for a GAP package, E 38
- InitFusion, R 821
- InitPowerMap, R 819
- Injection, N 18
- InjectionZeroMagma, R 322
- InnerAutomorphism, R 391
- InnerAutomorphismNC, R 391
- InnerAutomorphismsAutomorphismGroup, R 392
- inner product, of group characters, R 778
- In Parent Attributes, *E 47*
- InParentFOA, E 48
- Input-Output Streams, *R 104*
- InputLogTo, R 95
 - for streams, R 102
 - stop logging input, R 95
- InputOutputLocalProcess, R 105
- InputTextFile, R 103

- InputTextNone, R 106
- InputTextString, R 104
- InputTextUser, R 103
- InsertTrivialStabilizer, R 426
- InstallAtExit, R 73
- installation, R 831
- Installation of GAP for MacOS, *R 842*
- Installation of GAP Package Binaries, *E 38*
- Installation Overview, *R 831*
- InstallCharReadHookFunc, R 106
- InstalledPackageVersion, R 848
- InstallFactorMaintenance, R 299
- InstallFlushableValue, P 32
- InstallGlobalFunction, P 32
- InstallHandlingByNiceBasis, R 613
- InstallImmediateMethod, P 14
- Installing a GAP Package, *R 846*
- Installing a Help Book, *E 42*
- InstallIsomorphismMaintenance, R 299
- InstallMethod, P 11
- InstallOtherMethod, P 12
- InstallSubsetMaintenance, R 299
- InstallTrueMethod, P 14
- InstallValue, P 32
- Int, R 127
 - for cyclotomics, R 158
 - for strings, R 258
- INT_CHAR, R 258
- integer part of a quotient, R 129
- Integers, R 126
- Integral Bases of Abelian Number Fields, *R 595*
- IntegralizedMat, R 246
- IntegratedStraightLineProgram, R 342
- IntermediateGroup, R 372
- IntermediateResultOfSLP, R 343
- IntermediateResultOfSLPWithoutOverwrite, R 343
- IntermediateResultsOfSLPWithoutOverwrite, R 343
- IntermediateSubgroups, R 372
- Internally Represented Cyclotomics, *R 166*
- Internally Represented Strings, *R 253*
- InterpolatedPolynomial, R 573
- IntersectBlist, R 213
- Intersection, R 275
 - for groups with pcgs, R 451
- intersection, of collections, R 275
 - of sets, R 198
- Intersection2, R 275
- IntersectionBlist, R 212
- IntersectionsTom, R 715
- IntersectSet, R 198
- IntFFE, R 587
- IntFFESymm, R 587
- IntHexString, R 258
- Introducing new Viewer for the Online Help, *E 45*
- IntScalarProducts, R 817
- IntVecFFE, R 587
- InvariantBilinearForm, R 432
- InvariantElementaryAbelianSeries, R 371
- Invariant Forms, *R 700*
- InvariantLattice, R 434
- InvariantQuadraticForm, R 432
- InvariantSesquilinearForm, R 432
- InvariantSubgroupsElementaryAbelianGroup, R 378
- Inverse, R 295
- inverse, group homomorphism, R 387
 - matrix, R 225
 - of class function, R 773
- InverseAttr, R 295
- InverseClasses, R 739
- InverseGeneralMapping, R 305
- InverseImmutable, R 295
- InverseMap, R 812
- InverseMatMod, R 239
- InverseMutable, R 295
- InverseOp, R 295
- InverseRepresentative, R 425
- InverseSameMutability, R 295
- InverseSM, R 295
- Invoking the Help, *R 22*
- Irr, R 735
- irrationalities, R 157
- IrrBaumClausen, R 752
- IrrConlon, R 752
- IrrDixonSchneider, R 752
- Irreducibility Tests, *R 698*
- irreducible character, R 777
- irreducible characters, computation, R 755
- IrreducibleDifferences, R 784
- Irreducible Maximal Finite Integral Matrix Groups, *R 531*
- IrreducibleModules, R 754
 - for groups with pcgs, R 451
- IrreducibleRepresentations, R 752

- IrreducibleRepresentationsDixon, R 753
- IrreducibleSolvableGroup, R 530
- IrreducibleSolvableGroupMS, R 530
- Irreducible Solvable Matrix Groups, *R 530*
- Is16BitsFamily, R 338
- Is32BitsFamily, R 338
- Is8BitsFamily, R 338
- IsAbelian, R 324
 - for character tables, R 736
- IsAbelianNumberField, R 594
- IsAbelianNumberFieldPolynomialRing, R 682
- IsAbelianTom, R 712
- IsAdditiveElement, R 300
- IsAdditiveElementWithInverse, R 300
- IsAdditiveElementWithZero, R 300
- IsAdditiveGroup, R 559
- IsAdditiveGroupGeneralMapping, R 312
- IsAdditiveGroupHomomorphism, R 312
- IsAdditivelyCommutative, R 560
- IsAdditivelyCommutativeElement, R 302
- IsAdditivelyCommutativeElementCollColl, R 302
- IsAdditivelyCommutativeElementCollection, R 302
- IsAdditivelyCommutativeElementFamily, R 302
- IsAdditiveMagma, R 558
- IsAdditiveMagmaWithInverses, R 559
- IsAdditiveMagmaWithZero, R 558
- IsAlgebra, R 622
- IsAlgebraGeneralMapping, R 313
- IsAlgebraHomomorphism, R 313
- IsAlgebraicElement, R 693
- IsAlgebraicExtension, R 692
- IsAlgebraModuleElement, R 634
- IsAlgebraModuleElementCollection, R 634
- IsAlgebraModuleElementFamily, R 634
- IsAlgebraWithOne, R 622
- IsAlgebraWithOneGeneralMapping, R 313
- IsAlgebraWithOneHomomorphism, R 313
- IsAlphaChar, R 254
- IsAlternatingGroup, R 418
- IsAnticommutative, R 568
- IsAntisymmetricBinaryRelation, R 316
- IsAssociated, R 569
- IsAssociative, R 324
- IsAssociativeElement, R 302
- IsAssociativeElementCollColl, R 302
- IsAssociativeElementCollection, R 302
- IsAssocWord, R 331
- IsAssocWordWithInverse, R 331
- IsAssocWordWithOne, R 331
- IsAttributeStoringRep, P 38
- IsAutomorphismGroup, R 392
- IsBasicWreathLessThanOrEqual, R 334
- IsBasicWreathProductOrdering, R 286
- IsBasis, R 602
- IsBasisByNiceBasis, R 613
- IsBasisOfAlgebraModuleElementSpace, R 635
- IsBergerCondition, R 825
- IsBijection, T 79
- IsBijective, R 307
- IsBinaryRelation, R 315
 - same as IsEndoGeneralMapping, R 315
- IsBLetterAssocWordRep, R 338
- IsBLetterWordsFamily, R 338
- IsBlist, R 211
- IsBlockMatrixRep, R 240
- IsBool, R 170
- IsBound, for lists, R 179
- IsBound and Unbind for Lists, *R 179*
- IsBound and Unbind for Records, *R 266*
- IsBoundElmWPObj, E 52
- IsBoundGlobal, R 45
- IsBrauerTable, R 730
- IsBravaisGroup, R 434
- IsBuiltFromAdditiveMagmaWithInverses, R 347
- IsBuiltFromGroup, R 347
- IsBuiltFromMagma, R 347
- IsBuiltFromMagmaWithInverses, R 347
- IsBuiltFromMagmaWithOne, R 347
- IsBuiltFromSemigroup, R 347
- IsCanonicalBasis, R 605
- IsCanonicalBasisFullMatrixModule, R 609
- IsCanonicalBasisFullRowModule, R 609
- IsCanonicalNiceMonomorphism, R 390
- IsCanonicalPcgs, R 442
- IsCentral, R 324
- IsCentralFactor, R 383
- IsChainTypeGroup, N 19
- IsChar, R 250
- IsCharacter, R 777
- IsCharacteristicSubgroup, R 353
- IsCharacterTable, R 730
- IsCharacterTableInProgress, R 730
- IsCharCollection, R 250
- IsCheapConwayPolynomial, R 590

- IsClassFunction, R 768
- IsClassFusionOfNormalSubgroup, R 746
- IsClosedStream, R 97
- IsCochain, R 656
- IsCochainCollection, R 656
- IsCollection, R 268
- IsCollectionFamily, R 268
- IsCommutative, R 324
- IsCommutativeElement, R 302
- IsCommutativeElementCollColl, R 302
- IsCommutativeElementCollection, R 302
- IsComponentObjectRep, P 39
- IsCompositionMappingRep, R 305
- IsConfluent, R 345
 - for pc groups, R 456
- IsConjugacyClassSubgroupsByStabilizerRep, R 374
- IsConjugacyClassSubgroupsRep, R 374
- IsConjugate, R 362
- IsConjugatorAutomorphism, R 391
- IsConjugatorIsomorphism, R 391
- IsConstantRationalFunction, R 674
- IsConstantTimeAccessGeneralMapping, R 313
- IsConstantTimeAccessList, R 174
- IsContainedInSpan, R 607
- IsCopyable, R 112
- IsCyc, R 158
- IsCyclic, R 367
 - for character tables, R 736
- IsCyclicTom, R 712
- IsCyclotomic, R 158
- IsCyclotomicField, R 594
- IsCyclotomicMatrixGroup, R 433
- IsDenseList, R 173
- IsDiagonalMat, R 227
- IsDictionary, N 9
- IsDigitChar, R 254
- IsDirectoryPath, R 93
- IsDistributive, R 568
- IsDivisionRing, R 578
- IsDomain, R 292
- IsDoneIterator, R 279
- IsDoubleCoset, R 360
- IsDuplicateFree, R 195
- IsDuplicateFreeList, R 195
- IsDxLargeGroup, R 756
- IsElementaryAbelian, R 367
 - for character tables, R 736
- IsElementOfFpMonoid, R 550
- IsElementOfFpSemigroup, R 550
- IsElementOfFreeMagmaRing, R 665
- IsElementOfFreeMagmaRingCollection, R 665
- IsElementOfFreeMagmaRingFamily, R 665
- IsElementOfMagmaRingModuloRelations, R 666
- IsElementOfMagmaRingModuloRelations-Collection, R 666
- IsElementOfMagmaRingModuloRelationsFamily, R 666
- IsElementOfMagmaRingModuloSpanOfZeroFamily, R 667
- IsEmpty, R 273
- IsEmptyString, R 253
- IsEndOfStream, R 100
- IsEndoGeneralMapping, R 313
 - same as IsBinaryRelation, R 315
- IsEqualSet, R 197
- IsEquivalenceClass, R 319
- IsEquivalenceRelation, R 316
- IsEuclideanRing, R 570
- IsEvenInt, R 127
- IsExecutableFile, R 93
- IsExistingFile, R 93
- IsExtAElement, R 300
- IsExternalOrbit, R 410
- IsExternalSet, R 409
- IsExternalSubset, R 410
- IsExtLElement, R 300
- IsExtRElement, R 300
- IsFamilyPcgs, R 454
- IsFFE, R 584
- IsFFECollColl, R 584
- IsFFECollection, R 584
- IsField, R 578
- IsFieldControlledByGaloisGroup, R 581
- IsFieldHomomorphism, R 313
- IsFinite, R 273
 - for character tables, R 736
- IsFiniteDimensional, R 576
 - for matrix algebras, R 623
- IsFiniteFieldPolynomialRing, R 682
- IsFinitelyGeneratedGroup, R 368
- IsFiniteOrderElement, R 302
- IsFiniteOrderElementCollColl, R 302
- IsFiniteOrderElementCollection, R 302
- IsFiniteOrdersPcgs, R 438
- IsFixedStabilizer, R 427

- IsFLMLOR, R 622
- IsFLMLORWithOne, R 622
- IsFpGroup, R 464
- IsFpMonoid, R 550
- IsFpSemigroup, R 550
- IsFreeGroup, R 332
- IsFreeLeftModule, R 576
- IsFreeMagmaRing, R 664
- IsFreeMagmaRingWithOne, R 664
- IsFromFpGroupGeneralMappingByImages, R 396
- IsFromFpGroupHomomorphismByImages, R 396
- IsFromFpGroupStdGensGeneralMappingByImages, R 396
- IsFromFpGroupStdGensHomomorphismByImages, R 396
- IsFullHomModule, R 612
- IsFullMatrixModule, R 577
- IsFullRowModule, R 577
- IsFullSubgroupGLorSLRespectingBilinearForm, R 432
- IsFullSubgroupGLorSLRespectingQuadraticForm, R 433
- IsFullSubgroupGLorSLRespectingSesquilinearForm, R 432
- IsFullTransformationSemigroup, R 541
- IsFunc, T 79
- IsFunction, R 63
- IsGAPRandomSource, R 136
- IsGaussianIntegers, R 598
- IsGaussianRationals, R 593
- IsGaussianSpace, R 607
- IsGaussInt, R 160
- IsGaussRat, R 160
- IsGeneralizedDomain, R 292
- IsGeneralizedRowVector, R 185
- IsGeneralLinearGroup, R 431
- IsGeneralMapping, R 313
- IsGeneralMappingFamily, R 314
- IsGeneratorsOf *Struct*, R 289
- IsGL, R 431
- IsGlobalRandomSource, R 136
- IsGreensClass, R 543
- IsGreensDClass, R 543
- IsGreensDRelation, R 543
- IsGreensHClass, R 543
- IsGreensHRelation, R 543
- IsGreensJClass, R 543
- IsGreensJRelation, R 543
- IsGreensLClass, R 543
- IsGreensLessThanOrEqual, R 543
- IsGreensLRelation, R 543
- IsGreensRClass, R 543
- IsGreensRelation, R 543
- IsGreensRRelation, R 543
- IsGroup, R 351
- IsGroupGeneralMapping, R 311
- IsGroupGeneralMappingByAsGroupGeneralMappingByImages, R 396
- IsGroupGeneralMappingByImages, R 396
- IsGroupGeneralMappingByPcgs, R 396
- IsGroupHClass, R 544
- IsGroupHomomorphism, R 311
- IsGroupOfAutomorphisms, R 392
- IsGroupRing, R 664
- IsHandledByNiceBasis, R 577
 - for vector spaces, R 613
- IsHandledByNiceMonomorphism, R 390
- IsHash, N 10
- IsHasseDiagram, R 316
- IsHomCoset, N 13
- IsHomCosetOfAdditiveElt, N 14
- IsHomCosetOfFp, N 14
- IsHomCosetOfMatrix, N 14
- IsHomCosetOfPerm, N 14
- IsHomCosetOfTuple, N 14
- IsHomCosetToAdditiveElt, N 13
- IsHomCosetToAdditiveEltRep, N 13
- IsHomCosetToFp, N 13
- IsHomCosetToFpRep, N 13
- IsHomCosetToMatrix, N 13
- IsHomCosetToMatrixRep, N 13
- IsHomCosetToObjectRep, N 13
- IsHomCosetToPerm, N 13
- IsHomCosetToPermRep, N 13
- IsHomCosetToTuple, N 13
- IsHomCosetToTupleRep, N 13
- IsHomogeneousList, R 174
- IsIdempotent, R 295
- IsIdenticalObj, R 110, T 24
- IsInChain, N 19
- IsIncomparableUnder, R 282
- IsInducedFromNormalSubgroup, R 827
- IsInducedPcgs, R 441
- IsInducedPcgsWrtSpecialPcgs, R 449
- IsInfBitsFamily, R 338
- IsInfinity, R 160

- IsInjective, R 307
- IsInnerAutomorphism, R 391
- IsInputOutputStream, R 104
- IsInputStream, R 97
- IsInputTextNone, R 97
- IsInputTextStream, R 97
- IsInt, R 127
- IsIntegerMatrixGroup, R 434
- IsIntegers, R 126
- IsIntegralBasis, R 605
- IsIntegralCyclotomic, R 158
- IsIntegralRing, R 567
- IsInternallyConsistent, R 114
 - for character tables, R 745
 - for tables of marks, R 713
- IsIrreducibleCharacter, R 777
- IsIrreducibleRingElement, R 569
- IsIterator, R 279
- IsJacobianElement, R 302
- IsJacobianElementCollColl, R 302
- IsJacobianElementCollection, R 302
- IsJacobianRing, R 568
- IsLaurentPolynomial, R 673
- IsLaurentPolynomialDefaultRep, R 689
- IsLDistributive, R 568
- IsLeftAlgebraModuleElement, R 634
- IsLeftAlgebraModuleElementCollection, R 634
- IsLeftIdeal, R 565
- IsLeftIdealInParent, R 565
- IsLeftModule, R 574
- IsLeftModuleGeneralMapping, R 312
- IsLeftModuleHomomorphism, R 312
- IsLeftOperatorAdditiveGroup, R 574
- IsLeftSemigroupIdeal, R 541
- IsLeftVectorSpace, R 599
- IsLessThanOrEqualUnder, R 282
- IsLessThanUnder, R 282
- IsLetterAssocWordRep, R 337
- IsLetterWordsFamily, R 337
- IsLexicographicallyLess, R 201
- IsLexOrderedFFE, R 585
- IsLieAbelian, R 645
- IsLieAlgebra, R 622
- IsLieMatrix, R 224
- IsLieNilpotent, R 645
- IsLieObject, R 640
- IsLieObjectCollection, R 640
- IsLieSolvable, R 645
- IsLinearMapping, R 312
- IsLinearMappingsModule, R 612
- IsList, R 173
- IsListDefault, R 186
- IsListOrCollection, R 269
- IsLogOrderedFFE, R 585
- IsLookupDictionary, N 9
- IsLowerAlphaChar, R 254
- IsLowerTriangularMat, R 227
- IsMagma, R 320
- IsMagmaHomomorphism, R 310
- IsMagmaRingModuloRelations, R 666
- IsMagmaRingModuloSpanOfZero, R 667
- IsMagmaWithInverses, R 320
- IsMagmaWithInversesIfNonzero, R 320
- IsMagmaWithOne, R 320
- IsMapping, R 306
- IsMat, T 79
- IsMatchingSublist, R 194
- IsMatrix, R 223
- IsMatrixGroup, R 430
- IsMatrixModule, R 577
- IsMatrixSpace, R 607
- IsMersenneTwister, R 136
- IsMinimalNonmonomial, R 830
- IsModuloPcgs, R 443
- IsMonoid, R 546
- IsMonomial, for characters, R 827
 - for character tables, R 736
 - for groups, R 827
 - for positive integers, R 828
- IsMonomialGroup, R 367
- IsMonomialMatrix, R 227
- IsMonomialNumber, R 828
- IsMonomialOrdering, R 683
- IsMultiplicativeElement, R 300
- IsMultiplicativeElementWithInverse, R 301
- IsMultiplicativeElementWithOne, R 301
- IsMultiplicativeElementWithZero, R 301
- IsMultiplicativeGeneralizedRowVector, R 185
- IsMultiplicativeZero, R 324
- IsMutable, R 112
- IsMutableBasis, R 606
- IsNaturalAlternatingGroup, R 417
- IsNaturalGL, R 432
- IsNaturalGLnZ, R 434
- IsNaturalSL, R 432
- IsNaturalSLnZ, R 434

- IsNaturalSymmetricGroup, R 417
- IsNearAdditiveElement, R 300
- IsNearAdditiveElementWithInverse, R 300
- IsNearAdditiveElementWithZero, R 300
- IsNearAdditiveGroup, R 558
- IsNearAdditiveMagma, R 558
- IsNearAdditiveMagmaWithInverses, R 558
- IsNearAdditiveMagmaWithZero, R 558
- IsNearlyCharacterTable, R 730
- IsNearRingElement, R 301
- IsNearRingElementWithInverse, R 301
- IsNearRingElementWithOne, R 301
- IsNegRat, R 146
- IsNilpotent, for character tables, R 736
 - for groups with pcgs, R 451
- IsNilpotentElement, R 652
- IsNilpotentGroup, R 367
- IsNilpotentTom, R 712
- IsNonassocWord, R 327
- IsNonassocWordCollection, R 327
- IsNonassocWordWithOne, R 327
- IsNonassocWordWithOneCollection, R 327
- IsNonnegativeIntegers, R 126
- IsNonSPGeneralMapping, R 314
- IsNonTrivial, R 273
- IsNormal, R 352
- IsNormalBasis, R 605
- IsNotIdenticalObj, R 111
- IsNumberField, R 594
- IsObject, R 109
- IsOddInt, R 127
- isomorphic, pc group, R 458
- IsomorphicSubgroups, R 394
- IsomorphismFpAlgebra, R 631
- IsomorphismFpGroup, R 473
 - for subgroups of fp groups, R 475
- IsomorphismFpGroupByGenerators, R 473
- IsomorphismFpGroupByGeneratorsNC, R 473
- IsomorphismFpGroupByPcgs, R 455
- IsomorphismFpSemigroup, R 551
- IsomorphismGroups, R 394
- IsomorphismMatrixAlgebra, R 631
- IsomorphismPcGroup, R 458
- IsomorphismPermGroup, R 417
 - for Imf matrix groups, R 537
- IsomorphismPermGroupImfGroup, R 538
- IsomorphismReesMatrixSemigroup, R 545
- IsomorphismRefinedPcGroup, R 457
- IsomorphismRepStruct, R 290
- isomorphisms, find all, R 394
- IsomorphismSCAlgebra, R 632
- IsomorphismSimplifiedFpGroup, R 476
- IsomorphismSpecialPcGroup, R 458
- Isomorphisms vs. Isomorphic Structures, *T* 84
- IsomorphismTransformationSemigroup, R 541
- IsomorphismTypeInfoFiniteSimpleGroup, R 368
- IsOne, R 295
- IsOperation, R 63
- IsOrdering, R 281
- IsOrderingOnFamilyOfAssocWords, R 283
- IsOrdinaryMatrix, R 223
- IsOrdinaryTable, R 730
- IsOutputStream, R 97
- IsOutputTextNone, R 98
- IsOutputTextStream, R 98
- IsPadicExtensionNumber, R 696
- IsPadicExtensionNumberFamily, R 696
- IsParentPcgsFamilyPcgs, R 454
- IsPartialOrderBinaryRelation, R 316
- IsPcGroup, R 455
- IsPcGroupGeneralMappingByImages, R 396
- IsPcGroupHomomorphismByImages, R 396
- IsPcgs, R 437
- IsPcgsCentralSeries, R 445
- IsPcgsChiefSeries, R 446
- IsPcgsElementaryAbelianSeries, R 445
- IsPcgsPCentralSeriesPGroup, R 446
- IsPerfect, for character tables, R 736
- IsPerfectGroup, R 367
- IsPerfectTom, R 712
- IsPerm, R 412
- IsPermCollColl, R 412
- IsPermCollection, R 412
- IsPermGroup, R 416
- IsPermGroupGeneralMappingByImages, R 396
- IsPermGroupHomomorphismByImages, R 396
- IsPGroup, R 368
- IsPNilpotent, R 369
- IsPolycyclicGroup, R 367
- IsPolynomial, R 673
- IsPolynomialDefaultRep, R 689
- IsPolynomialFunction, R 672
- IsPolynomialFunctionsFamily, R 687
- IsPolynomialRing, R 682
- IsPosInt, R 127
- IsPositiveIntegers, R 126

- IsPosRat, R 146
- IsPreimagesByAsGroupGeneralMappingByImages, R 396
- IsPreOrderBinaryRelation, R 316
- IsPrime, R 569
- IsPrimeField, R 580
- IsPrimeInt, R 131
- IsPrimeOrdersPcgs, R 438
- IsPrimePowerInt, R 132
- IsPrimitive, R 408
- IsPrimitiveCharacter, R 826
- IsPrimitivePolynomial, R 674
- IsPrimitiveRootMod, R 140
- IsProbablyPrimeInt, R 131
- IsPseudoCanonicalBasisFullHomModule, R 612
- IsPSolvable, R 369
- IsPSolvableCharacterTable, R 746
- IsPSolvableCharacterTableOp, R 746
- IsPurePadicNumber, R 695
- IsPurePadicNumberFamily, R 695
- IsQuasiPrimitive, R 826
- IsQuaternion, R 623
- IsQuaternionCollColl, R 623
- IsQuaternionCollection, R 623
- IsQuickPositionList, R 209
- IsQuotientSemigroup, R 542
- IsRandomSource, R 136
- IsRange, R 208
- IsRat, R 145
- IsRationalFunction, R 672
- IsRationalFunctionDefaultRep, R 689
- IsRationalFunctionsFamily, R 687
- IsRationalMatrixGroup, R 433
- IsRationals, R 145
- IsRationalsPolynomialRing, R 682
- IsRDistributive, R 568
- IsReadableFile, R 93
- IsReadOnlyGlobal, R 44
- IsRec, T 79
- IsRecord, R 262
- IsRecordCollColl, R 262
- IsRecordCollection, R 262
- IsReduced, R 346
- IsReductionOrdering, R 283
- IsReesCongruence, R 542
- IsReesCongruenceSemigroup, R 541
- IsReesMatrixSemigroup, R 544
- IsReesMatrixSemigroupElement, R 545
- IsReesZeroMatrixSemigroup, R 544
- IsReesZeroMatrixSemigroupElement, R 545
- IsReflexiveBinaryRelation, R 315
- IsRegular, R 407
- IsRegularDClass, R 544
- IsRegularSemigroup, R 540
- IsRegularSemigroupElement, R 540
- IsRelativelySM, R 829
- IsRestrictedLieAlgebra, R 650
- IsRewritingSystem, R 345
- IsRightAlgebraModuleElement, R 634
- IsRightAlgebraModuleElementCollection, R 634
- IsRightCoset, R 358
- IsRightIdeal, R 565
- IsRightIdealInParent, R 565
- IsRightModule, R 575
- IsRightOperatorAdditiveGroup, R 574
- IsRightSemigroupIdeal, R 541
- IsRing, R 562
- IsRingElement, R 301
- IsRingElementWithInverse, R 301
- IsRingElementWithOne, R 301
- IsRingGeneralMapping, R 313
- IsRingHomomorphism, R 313
- IsRingWithOne, R 566
- IsRingWithOneGeneralMapping, R 313
- IsRingWithOneHomomorphism, R 313
- IsRootSystem, R 647
- IsRootSystemFromLieAlgebra, R 647
- IsRowModule, R 577
- IsRowSpace, R 607
- IsRowVector, R 215
- IsScalar, R 301
- IsSemiEchelonized, R 608
- IsSemigroup, R 539
- IsSemigroupCongruence, R 542
- IsSemigroupIdeal, R 541
- IsSemiRegular, R 407
- IsSet, R 195, T 79
- IsShortLexLessThanOrEqual, R 334
- IsShortLexOrdering, R 284
- IsSimple, for character tables, R 736
- IsSimpleAlgebra, R 623
- IsSimpleGroup, R 367
- IsSimpleSemigroup, R 540
- IsSingleValued, R 306
- IsSL, R 432
- IsSolvable, for character tables, R 736

- IsSolvableGroup, R 367
- IsSolvableTom, R 712
- IsSortedList, R 195
- IsSpecialLinearGroup, R 432
- IsSpecialPcgs, R 448
- IsSPGeneralMapping, R 314
- IsSporadicSimple, for character tables, R 736
- IsSSortedList, R 195
- IsStandardGeneratorsOfGroup, R 718
- IsStraightLineProgElm, R 343
- IsStraightLineProgram, R 339
- IsStream, R 97
- IsString, R 250
- IsStringRep, R 253
- IsStruct, R 290
- IsSubgroup, R 352
- IsSubgroupFpGroup, R 464
- IsSubgroupOfWholeGroupByQuotientRep, R 477
- IsSubgroupSL, R 432
- IsSubmonoidFpMonoid, R 549
- IsSubnormal, R 353
- IsSubnormallyMonomial, R 829
- IsSubsemigroupFpSemigroup, R 549
- IsSubset, R 275
- IsSubsetBlist, R 212
- IsSubsetLocallyFiniteGroup, R 368
- IsSubsetSet, R 198
- IsSubspacesVectorSpace, R 601
- IsSubstruct, R 292
- IsSupersolvable, for character tables, R 736
 - for groups with pcgs, R 451
- IsSupersolvableGroup, R 367
- IsSurjective, R 307
- IsSyllableAssocWordRep, R 338
- IsSyllableWordsFamily, R 338
- IsSymmetricBinaryRelation, R 316
- IsSymmetricGroup, R 418
- IsTable, R 174
- IsTableOfMarks, R 708
- IsTableOfMarksWithGens, R 719
- IsToPcGroupGeneralMappingByImages, R 396
- IsToPcGroupHomomorphismByImages, R 396
- IsToPermGroupGeneralMappingByImages, R 396
- IsToPermGroupHomomorphismByImages, R 396
- IsTotal, R 306
- IsTotalOrdering, R 282
- IsTransformation, R 555
- IsTransformationCollection, R 555
- IsTransformationMonoid, R 541
- IsTransformationSemigroup, R 541
- IsTransitive, for characters, R 780
 - for class functions, R 780
 - for group actions, R 407
- IsTransitiveBinaryRelation, R 316
- IsTranslationInvariantOrdering, R 283
- IsTrivial, R 273
- IsTuple, R 304
- IsTwoSidedIdeal, R 565
- IsTwoSidedIdealInParent, R 565
- IsUEALatticeElement, R 659
- IsUEALatticeElementCollection, R 659
- IsUEALatticeElementFamily, R 659
- IsUniqueFactorizationRing, R 567
- IsUnit, R 568
- IsUnivariatePolynomial, R 673
- IsUnivariatePolynomialRing, R 683
- IsUnivariateRationalFunction, R 673
- IsUnknown, R 168
- IsUpperAlphaChar, R 254
- IsUpperTriangularMat, R 227
- IsValidIdentifier, R 42
- IsVector, R 301
- IsVectorSpace, R 599
- IsVirtualCharacter, R 777
- IsWeightLexOrdering, R 285
- IsWeightRepElement, R 660
- IsWeightRepElementCollection, R 660
- IsWeightRepElementFamily, R 660
- IsWellFoundedOrdering, R 282
- IsWeylGroup, R 648
- IsWholeFamily, R 274
- IsWLetterAssocWordRep, R 338
- IsWLetterWordsFamily, R 338
- IsWord, R 326
- IsWordCollection, R 327
- IsWordWithInverse, R 326
- IsWordWithOne, R 326
- IsWreathProductOrdering, R 286
- IsWritableFile, R 93
- IsZero, R 295
- IsZeroGroup, R 541
- IsZeroSimpleSemigroup, R 540
- IsZeroSquaredElement, R 303
- IsZeroSquaredElementCollColl, R 303
- IsZeroSquaredElementCollection, R 303
- IsZeroSquaredRing, R 568

IsZmodnZObj, R 135
 IsZmodnZObjNonprime, R 135
 IsZmodpZObj, R 135
 IsZmodpZObjLarge, R 135
 IsZmodpZObjSmall, R 135
 Iterated, R 206
 Iterator, R 278
 iterator, for low index subgroups, R 472
 IteratorByBasis, R 604
 IteratorByFunctions, R 280
 IteratorList, R 280
 Iterators, *R 278*
 IteratorSorted, R 279

J

j_N , R 162
 Jacobi, R 140
 JenningsLieAlgebra, R 651
 JenningsSeries, R 372
 JoinEquivalenceRelations, R 318
 JoinStringsWithSeparator, R 257
 JordanDecomposition, R 236

K

k_N , R 162
 KappaPerp, R 652
 KB_REW, R 553
 kernel, T 55
 KernelOfAdditiveGeneralMapping, R 312
 KernelOfCharacter, R 779
 KernelOfMultiplicativeGeneralMapping, R 311
 KernelOfTransformation, R 556
 KeyDependentOperation, E 46
 Key Dependent Operations, *E 46*
 Keywords, *R 41*
 KillingMatrix, R 652
 KnownAttributesOfObject, R 121, T 75
 Known Problems of the Configure Process, *R 838*
 KnownPropertiesOfObject, R 124, T 75
 KnownTruePropertiesOfObject, R 124, T 75
 KnowsDictionary, N 9
 KnowsHowToDecompose, R 384
 KnuthBendixRewritingSystem, R 554
 Krasner-Kaloujnine theorem, R 509
 KroneckerProduct, R 229
 KuKGenerators, R 509

L

l_N , R 162

Labels and References, *E 15*
 Lambda, R 138
 Language Overview, *R 39*
 larger or equal, R 47
 larger test, R 47
 LargestElementGroup, R 380
 LargestElementStabChain, R 425
 LargestMovedPoint, R 413
 LargestUnknown, R 168
 last, R 64, T 24
 last2, T 24
 last3, T 24
 LastSystemError, R 90
 LaTeXStringDecompositionMatrix, R 744
 lattice base reduction, R 247
 lattice basis reduction, for virtual characters, R 785
 LatticeByCyclicExtension, R 377
 LatticeGeneratorsInUEA, R 659
 Lattice Reduction, *R 246*
 LatticeSubgroups, R 375
 LatticeSubgroupsByTom, R 706
 LaurentPolynomialByCoefficients, R 680
 LaurentPolynomialByExtRep, R 690
 LaurentPolynomialByExtRepNC, R 690
 Laurent Polynomials, *R 680*
 LClassOfHClass, R 543
 Lcm, R 572
 LcmInt, R 130
 LcmOp, R 572
 LeadCoeffsIGS, R 442
 LeadingCoefficient, R 675
 LeadingCoefficientOfPolynomial, R 684
 LeadingExponentOfPcElement, R 439
 LeadingMonomial, R 676
 LeadingMonomialOfPolynomial, R 683
 LeadingTermOfPolynomial, R 683
 Leaving GAP, *R 73*
 leaving GAP, T 18
 LeftActingAlgebra, R 635
 LeftActingDomain, R 575
 LeftActingRingOfIdeal, R 566
 LeftAlgebraModule, R 633
 LeftAlgebraModuleByGenerators, R 633
 left cosets, R 358
 LeftDerivations, R 642
 LeftIdeal, R 564
 LeftIdealByGenerators, R 565
 LeftIdealNC, R 565

- LeftModuleByGenerators, R 575
- LeftModuleByHomomorphismToMatAlg, R 636
- LeftModuleGeneralMappingByImages, R 610
- LeftModuleHomomorphismByImages, R 610
- LeftModuleHomomorphismByImagesNC, R 610
- LeftModuleHomomorphismByMatrix, R 611
- LeftQuotient, R 297
 - for words, R 335
- LeftShiftRowVector, R 219
- legacy, R 850
- Legendre, R 141
- Length, R 195
 - of an associative word, R 335
- length, of a word, R 335
- LengthsTom, R 709
- LengthWord, T 79
- LengthWPObj, E 52
- LenstraBase, R 596
- LessThanFunction, R 282
- LessThanOrEqualFunction, R 282
- LetterRepAssocWord, R 338
- LevelsOfGenerators, R 286
- LeviMalcevDecomposition, R 628
 - for Lie algebras, R 646
- Lexical Structure, R 40
- LexicographicOrdering, R 283
- LGFirst, R 449
- LGLayers, R 449
- LGLength, R 449
- LGWeights, R 448
- library tables, R 727
- LieAlgebra, R 641
- LieAlgebraByStructureConstants, R 641
- LieBracket, R 297
- LieCenter, R 643
- LieCentralizer, R 643
- LieCentre, R 643
- LieCoboundaryOperator, R 656
- LieDerivedSeries, R 644
- LieDerivedSubalgebra, R 644
- LieFamily, R 641
- LieLowerCentralSeries, R 645
- LieNilRadical, R 644
- LieNormalizer, R 643
- LieObject, R 640
- Lie objects, R 640
- LieSolvableRadical, R 644
- LieUpperCentralSeries, R 645
- LiftedInducedPcgs, R 444
- LiftedPcElement, R 444
- LinearAction, R 450
- LinearActionLayer, R 450
- LinearCharacters, R 736
- LinearCombination, R 604
- LinearCombinationPcgs, R 439
- Linear equations over the integers and Integral Matrices, R 241
- LinearIndependentColumns, R 246
- Linear Mappings, R 312
- LinearOperation, R 450
- LinearOperationLayer, R 450
- Line Editing, R 74
- line editing, T 20
- LinesOfStraightLineProgram, R 340
- List, R 203
- list and non-list, difference, R 188
 - left quotient, R 190
 - mod, R 190
 - product, R 189
 - quotient, R 190
- List Assignment, R 177
- list assignment, operation, R 175
- ListBlist, R 212
- list boundedness test, operation, R 175
- List Categories, R 173
- list element, access, R 175
 - assignment, R 177
 - operation, R 175
- List Elements, R 175
- list environment, compact description, E 21
 - description, E 20
 - ordered, E 21
 - unordered, E 21
- list equal, comparison, R 184
- ListN, R 206
- list of available books, R 23
- List Operations, T 35
- ListPerm, R 415
- lists, dense, T 29
 - strictly sorted, T 31
- lists, identical, T 29
 - plain, T 27
- Lists and Collections, R 269
- list smaller, comparison, R 184
- ListStabChain, R 425
- list unbind, operation, R 175

ListWithIdenticalEntries, R 191
 ListX, R 206
 LLL, R 785
 LLL algorithm, for Gram matrices, R 247
 for vectors, R 246
 for virtual characters, R 785
 LLLReducedBasis, R 246
 LLLReducedGramMat, R 247
 LoadDynamicModule, R 35
 Loading a GAP Package, *R 846*
 loading a saved workspace, R 37
 loading source code from a file, T 19
 LoadPackage, R 846
 local, R 55
 Local Variables, *T 41*
 logarithm, discrete, R 140
 of a root of unity, R 160
 LogFFE, R 586
 logical, R 170
 Logical Implications, *P 14*
 logical operations, R 171
 LogInt, R 128
 LogMod, R 139
 LogModShanks, R 139
 LogTo, R 95
 for streams, R 101
 stop logging, R 95
 LongestWeylWordPerm, R 649
 LookupDictionary, N 9
 loop, read eval print, R 64
 loop, for, R 53
 repeat, R 52
 while, R 52
 loop over iterator, R 54
 loop over object, R 54
 loop over range, R 53
 loops, leaving, R 55
 restarting, R 55
 loops, for, *T 33*
 while, *T 33*
 LowercaseString, R 255
 LowerCentralSeriesOfGroup, R 371
 Low Index Subgroups, *R 472*
 LowIndexSubgroupsFpGroup, R 472
 LowIndexSubgroupsFpGroupIterator, R 472
 Low Level Access Functions for Weak Pointer
 Objects, *E 52*

Low Level Routines to Modify and Create Stabilizer
 Chains, *R 426*
 Lucas, R 155

M

m_N , R 162
 Macintosh, R 842
 MacOS, R 842
 Magma, R 321
 MagmaByGenerators, R 321
 MagmaByMultiplicationTable, R 322
 Magma Categories, *R 320*
 MagmaElement, R 322
 Magma Generation, *R 321*
 MagmaHomomorphismByFunctionNC, R 310
 Magma Homomorphisms, *R 310*
 MagmaRingModuloSpanOfZero, R 667
 Magma Rings modulo Relations, *R 666*
 Magma Rings modulo the Span of a Zero Element,
 R 667
 Magmas Defined by Multiplication Tables, *R 322*
 MagmaWithInverses, R 321
 MagmaWithInversesByGenerators, R 321
 MagmaWithInversesByMultiplicationTable,
 R 322
 MagmaWithOne, R 321
 MagmaWithOneByGenerators, R 321
 MagmaWithOneByMultiplicationTable, R 322
 Main Loop, *R 64*
 MakeConfluent, R 346
 MakeHomChain, N 21
 MakeImmutable, R 112
 makeindex, E 26
 MakeReadOnlyGlobal, R 44
 MakeReadWriteGlobal, R 44
 Making transformation semigroups, *R 541*
 manual.bbl, E 26
 manual.bib, E 26
 manual.dvi, E 26
 manual.lab, E 26
 manual.mst, E 26
 manual.six, E 26
 manual.tex, E 26
 Manual Conventions, *R 20*
 manualindex, E 26
 map, parametrized, R 811
 MappedWord, R 328
 MappingByFunction, R 305

- MappingPermListList, R 415
- Mappings that Respect Addition, *R 312*
- Mappings that Respect Multiplication, *R 311*
- Mappings which are Compatible with Algebraic Structures, *R 310*
- maps, R 802
- maps-to operator, T 25
- MarksTom, R 709
- MatAlgebra, R 619
- MatClassMultCoeffsCharTable, R 748
- mathematics alignments, E 23
- mathematics displays, E 23
- MathieuGroup, R 513
- MatLieAlgebra, R 642
- matrices, T 36
 - commutator, R 226
- Matrices as Basis of a Row Space, *R 234*
- Matrices as Linear Mappings, *R 235*
- Matrices over Finite Fields, *R 237*
- Matrices Representing Linear Equations and the Gaussian Algorithm, *R 230*
- MatrixAlgebra, R 619
- MatrixAutomorphisms, R 764
- matrix automorphisms, R 805
- MatrixByBlockMatrix, R 240
- Matrix Constructions, *R 228*
- Matrix Groups in Characteristic 0, *R 433*
- MatrixLieAlgebra, R 642
- MatrixOfAction, R 635
- matrix spaces, R 607
- MatScalarProducts, R 778
- MatTom, R 711
- MaximalAbelianQuotient, R 373
- MaximalBlocks, R 408
- MaximalNormalSubgroups, R 375
- MaximalSubgroupClassReps, R 374
- MaximalSubgroups, R 374
 - for groups with pcgs, R 451
- MaximalSubgroupsLattice, R 376
- MaximalSubgroupsTom, R 715
- Maximum, R 201
- MaximumList, R 202
- MeatAxe Modules, *R 697*
- MeetEquivalenceRelations, R 318
- MeetMaps, R 814
- MeetPartitionStrat, E 59
- meet strategy, E 59
- Membership Test for Collections, *R 277*
- Membership Test for Lists, *R 183*
- MemoryUsage, R 114
- method, P 11
- Method Installation, *P 11*
- methods, T 72
 - immediate, T 74
 - selection, T 73
 - true, T 74
- MinimalElementCosetStabChain, R 425
- MinimalGeneratingSet, R 380
 - for groups with pcgs, R 451
- MinimalNonmonomialGroup, R 830
- Minimal Nonmonomial Groups, *R 830*
- MinimalNormalSubgroups, R 375
- MinimalPolynomial, R 677
 - over a field, R 581
 - over a ring, R 677
- Minimal Polynomials, *R 677*
- MinimalStabChain, R 423
- MinimalSupergroupsLattice, R 376
- MinimalSupergroupsTom, R 716
- MinimizedBombieriNorm, R 679
- Minimum, R 201
- MinimumList, R 202
- MinusCharacter, R 820
- Miscellaneous, *R 144*
- Miscellaneous Name Changes or Removed Names, *R 851*
- mod, integers, R 135
 - laurent polynomials, R 671
 - lists, R 190
 - rationals, R 48
- mod, R 48
 - arithmetic operators, R 48
 - for character tables, R 734
 - residue class rings, R 134
- modular inverse, R 48
- modular remainder, R 48
- modular roots, R 142
- ModuleByRestriction, R 637
- Module Constructions, *R 697*
- Module Homomorphisms, *R 700*
- ModuleOfExtension, R 460
- Modules over Lie Algebras and Their Cohomology, *R 655*
- Modules over Semisimple Lie Algebras, *R 657*
- modulo, R 48
 - arithmetic operators, R 48

- for pcgs, R 443
- residue class rings, R 134
- ModuloPcgs, R 443
- MoebiusMu, R 143
- MoebiusTom, R 711
- Molien Series, *R 792*
- MolienSeries, R 792
- MolienSeriesInfo, R 792
- MolienSeriesWithGivenDenominator, R 793
- Monoid, R 546
- MonoidByGenerators, R 546
- MonoidByMultiplicationTable, R 547
- MonoidOfRewritingSystem, R 554
- MonomialComparisonFunction, R 684
- MonomialExtGrlexLess, R 686
- MonomialExtrepComparisonFun, R 684
- MonomialGrevlexOrdering, R 685
- MonomialGrlexOrdering, R 685
- MonomialLexOrdering, R 684
- Monomial Orderings, *R 683*
- MonomialTotalDegreeLess, R 851
- monomorphisms, find all, R 394
- MorClassLoop, R 394
- More about Boolean Lists, *R 214*
- More About Global Variables, *R 44*
- More about Tables of Marks, *R 703*
- MostFrequentGeneratorFpGroup, R 470
- MovedPoints, R 414
- Moved Points of Permutations, *R 413*
- MTX.BasesCompositionSeries, R 699
- MTX.BasesMaximalSubmodules, R 699
- MTX.BasesMinimalSubmodules, R 698
- MTX.BasesMinimalSupermodules, R 699
- MTX.BasesSubmodules, R 698
- MTX.BasisInOrbit, R 700
- MTX.BasisRadical, R 699
- MTX.BasisSocle, R 699
- MTX.CollectedExceptions, R 699
- MTX.CompositionFactors, R 699
- MTX.DegreeSplittingField, R 698
- MTX.Dimension, R 698
- MTX.Distinguish, R 700
- MTX.Field, R 698
- MTX.Generators, R 698
- MTX.Homomorphism, R 700
- MTX.Homomorphisms, R 700
- MTX.InducedAction, R 699
- MTX.InducedActionFactorMatrix, R 699
- MTX.InducedActionFactorModule, R 699
- MTX.InducedActionMatrix, R 699
- MTX.InducedActionMatrixNB, R 699
- MTX.InducedActionSubmodule, R 699
- MTX.InducedActionSubmoduleNB, R 699
- MTX.InvariantBilinearForm, R 700
- MTX.InvariantQuadraticForm, R 700
- MTX.InvariantSesquilinearForm, R 700
- MTX.IsAbsolutelyIrreducible, R 698
- MTX.IsEquivalent, R 700
- MTX.IsIrreducible, R 698
- MTX.Isomorphism, R 700
- MTX.NormedBasisAndBaseChange, R 699
- MTX.OrthogonalSign, R 700
- MTX.ProperSubmoduleBasis, R 698
- MTX.SubGModule, R 698
- MTX.SubmoduleGModule, R 698
- multiplication, R 48
 - matrices, R 225
 - matrix and matrix list, R 226
 - matrix and scalar, R 224
 - matrix and vector, R 225
 - operation, R 297
 - scalar and matrix, R 224
 - scalar and matrix list, R 226
 - scalar and vector, R 216
 - vector and matrix, R 225
 - vector and matrix list, R 226
 - vector and scalar, R 216
 - vectors, R 216
- MultiplicationTable, R 322
- Multiplicative Arithmetic for Lists, *R 188*
- Multiplicative Arithmetic Functions, *R 142*
- MultiplicativeNeutralElement, R 324
- multiplicative order of an integer, R 139
- MultiplicativeZero, R 324
- MultiplicativeZeroOp, R 294
- multiplicity, of constituents of a group character,
 - R 778
- multiplier, R 383
- multisets, R 197
- Multivariate Polynomials, *R 677*
- MultRowVector, R 219
- Murnaghan components, R 790
- Mutability and Copyability, *R 111*
- Mutability and Copying, *P 29*
- Mutability Status and List Arithmetic, *R 190*
- Mutable Bases, *R 606*

- MutableBasis, R 606
- MutableBasisOfClosureUnderAction, R 625
- MutableBasisOfIdealInNonassociativeAlgebra, R 626
- MutableBasisOfNonassociativeAlgebra, R 626
- MutableCopyMat, R 229
- MutableIdentityMat, R 229
- MutableNullMat, R 229
- N**
- n_k , R 163
- Name, R 114
- NameFunction, R 61
- NameRNam, R 267
- NamesFilter, R 118
- NamesGVars, R 45
- NamesLocalVariablesFunction, R 61
- NamesOfComponents, P 21
- NamesOfFusionSources, R 809
- NamesSystemGVars, R 45
- NamesUserGVars, R 45
- Naming Conventions, *T* 79
- NaturalCharacter, R 776
- Natural Embeddings related to Magma Rings, *R* 665
- NaturalHomomorphismByGenerators, R 310
- NaturalHomomorphismByIdeal, R 631
- NaturalHomomorphismByNormalSubgroup, R 373
- NaturalHomomorphismByNormalSubgroupNC, R 373
- NaturalHomomorphismBySubAlgebraModule, R 638
- NaturalHomomorphismBySubspace, R 611
- NearAdditiveGroup, R 559
- NearAdditiveGroupByGenerators, R 559
- NearAdditiveMagma, R 559
- NearAdditiveMagmaByGenerators, R 559
- NearAdditiveMagmaWithZero, R 559
- NearAdditiveMagmaWithZeroByGenerators, R 559
- NearlyCharacterTablesFamily, R 731
- negative number, R 48
- NegativeRoots, R 647
- NegativeRootVectors, R 647
- NestingDepthA, R 186
- NestingDepthM, R 186
- New Arithmetic Operations vs. New Objects, *P* 64
- NewAttribute, P 17
 - example, P 38
 - mutable, P 17
- NewCategory, P 16
- NewDictionary, N 9
- NewFamily, P 19
- NewFilter, P 18
- NewInfoClass, R 80
- newline, R 41
- newline character, R 252
- NewmanInfinityCriterion, R 480
- NewOperation, P 18
- New Presentations and Presentations for Subgroups, *R* 475
- NewProperty, P 17
- NewRepresentation, P 17
 - example, P 39
- NewType, P 20
- NextIterator, R 279
- NextPrimeInt, R 132
- NF, R 593
- NiceBasis, R 613
- NiceBasisFiltersInfo, R 614
- NiceFreeLeftModule, R 613
- NiceFreeLeftModuleInfo, R 613
- NiceMonomorphism, R 390
- NiceMonomorphismAutomGroup, R 393
- Nice Monomorphisms, *R* 390, *T* 56
- NiceObject, R 390
- NiceVector, R 613
- NilpotencyClassOfGroup, R 367
- NilpotentQuotientOfFpLieAlgebra, R 654
- NK, R 163
- NOAUTO, R 847
- NOfCyc, *T* 79
- NonabelianExteriorSquare, R 383
- NonnegativeIntegers, R 126
- NonnegIntScalarProducts, R 816
- NonNilpotentElement, R 652
- Norm, R 581
 - of character, R 778
- NormalBase, R 583
- NormalClosure, R 363
- NormalFormIntMat, R 244
- Normal Forms of Integer Matrices - Name Changes, *R* 851
- Normal Forms over the Integers, *R* 242
- NormalIntersection, R 363
- NormalizedElementOfMagmaRingModulo-Relations, R 666
- NormalizedWhitespace, R 256
- Normalizer, R 362
- normalizer, R 362

NormalizerInGLnZ, R 434
 NormalizerInGLnZBravaisGroup, R 434
 NormalizersTom, R 713
 NormalizerTom, R 713
 NormalizeWhitespace, R 256
 NormalSeriesByPcgs, R 447
 Normal Structure, *R 362*
 NormalSubgroupClasses, R 766
 NormalSubgroupClassesInfo, R 766
 NormalSubgroups, R 375
 NormedRowVector, R 217
 NormedRowVectors, R 610
 NormedVectors, R 851
 not, R 172
 Notions of Generation, *T 69*
 NrArrangements, R 150
 NrBasisVectors, R 606
 NrCombinations, R 149
 NrConjugacyClasses, R 361
 for character tables, R 736
 NrConjugacyClassesGL, R 517
 NrConjugacyClassesGU, R 517
 NrConjugacyClassesPGL, R 517
 NrConjugacyClassesPGU, R 517
 NrConjugacyClassesPSL, R 517
 NrConjugacyClassesPSU, R 517
 NrConjugacyClassesSL, R 517
 NrConjugacyClassesSLIsogeneous, R 517
 NrConjugacyClassesSU, R 517
 NrConjugacyClassesSUIsogeneous, R 517
 NrDerangements, R 152
 NrInputsOfStraightLineProgram, R 340
 NrMovedPoints, R 414
 NrOrderedPartitions, R 154
 NrPartitions, R 153
 NrPartitionsSet, R 152
 NrPartitionTuples, R 155
 NrPermutationsList, R 151
 NrPolyhedralSubgroups, R 747
 NrPrimitiveGroups, R 528
 NrRestrictedPartitions, R 154
 NrSubsTom, R 709
 NrTransitiveGroups, R 519
 NrTuples, R 151
 NrUnorderedTuples, R 150
 NullAlgebra, R 620
 NullMat, R 228
 NullspaceIntMat, R 241

NullspaceMat, R 230
 NullspaceMatDestructive, R 230
 NullspaceModQ, R 239
 Number, R 203
 number, Bell, R 148
 binomial, R 147
 Stirling, of the first kind, R 148
 Stirling, of the second kind, R 149
 NumberArgumentsFunction, R 61
 NumberFFVector, R 218
 number field, R 594
 number fields, Galois group, R 597
 NumberIrreducibleSolvableGroups, R 530
 NumberPerfectGroups, R 524
 NumberPerfectLibraryGroups, R 524
 NumberSmallGroups, R 521
 NumberSyllables, R 336
 Numerator, T 79
 numerator, of a rational, R 146
 NumeratorOfModuloPcgs, R 443
 NumeratorOfRationalFunction, R 672
 NumeratorRat, R 146
 Numerical Group Attributes, *R 369*

O

O, Operation mark-up, E 16
 $O_p(G)$, see PCore, R 362
 ObjByExtRep, P 29, R 659
 Objectify, P 20
 ObjectifyWithAttributes, P 20
 Objects, *R 109*
 objects, T 22
 objects, vs. elements, *T 24*
 vs. variables, *T 22*
 obsolete, R 850
 OCOneCocycles, R 382
 octal character codes, R 252
 OctaveAlgebra, R 619
 od, R 53
 OldGeneratorsOfPresentation, R 498
 Omega, R 366
 ONanScottType, R 418
 OnBreak, R 68
 OnBreakMessage, R 70
 One, N 17, R 293
 OneAttr, R 293
 OneCoboundaries, R 381
 OneCocycles, R 381

- one cohomology, R 380
- OneFactorBound, R 679
- OneImmutable, R 293
- OneIrreducibleSolvableGroup, R 530
- OneLibraryGroup, R 519
- OneMutable, R 293
- OneOfPcgs, R 438
- OneOp, R 293
- OnePrimitiveGroup, R 519
- OneSameMutability, R 293
- OneSM, R 293
- OneSmallGroup, R 521
- OneTransitiveGroup, R 519
- OnIndeterminates, R 677
 - as a permutation action, R 399
- OnLeftInverse, R 398
- OnLines, R 399
 - example, R 514
- OnPairs, R 398
- OnPoints, R 398
- OnRight, R 398
- OnSets, R 398
- OnSetsDisjointSets, R 399
- OnSetsSets, R 398
- OnSetsTuples, R 399
- OnSubspacesByCanonicalBasis, R 400
- OnTuples, R 398
- OnTuplesSets, R 399
- OnTuplesTuples, R 399
- Operation, R 850
- operation, P 11
- OperationAlgebraHomomorphism, R 631
- Operational Structure of Domains, R 287
- Operation Functions, E 48
- OperationHomomorphism, R 850
- operations, T 75
 - for booleans, R 171
- Operations and Attributes for Vector Spaces, R 600
- Operations and Mathematical Terms, P 14
- Operations and Methods, P 11
- Operations applicable to All Streams, R 98
- Operations Concerning Blocks, R 742
- Operations for (Near-)Additive Magmas, R 561
- Operations for Abelian Number Fields, R 593
- operations for algebraic elements, R 692
- Operations for Associative Words, R 335
- Operations for Associative Words by their Syllables, R 336
- Operations for Booleans, R 171
- Operations for Brauer Characters, R 800
- Operations for Class Functions, R 777
- Operations for Collections, R 275
- Operations for Cyclotomics, R 157
- Operations for Domains, R 292
- Operations for Finite Field Elements, R 586
- Operations for Finitely Presented Groups, R 466
- Operations for Group Homomorphisms, R 387
- Operations for Input Streams, R 98
- Operations for Lists, R 199
- Operations for Output Streams, R 101
- Operations for Pc Groups, R 458
- Operations for Rational Functions, R 671
- Operations for Special Kinds of Bases, R 605
- Operations for Stabilizer Chains, R 424
- Operations for Vector Space Bases, R 603
- Operations for Words, R 328
- Operations on elements of the algebra, R 346
- Operations on hom cosets, N 14
- Operations on rewriting systems, R 345
- Operations Records, T 82
- Operations to Evaluate Strings, R 258
- Operations to Produce or Manipulate Strings, R 255
- Operations vs. Dispatcher Functions, T 82
- Operations which have Special Methods for Groups with Pcgs, R 451
- operators, R 42, T 21
 - arithmetic, R 48
 - associativity, R 49
 - for cyclotomics, R 161
 - for lists, R 185
 - precedence, R 49
- Operators for Character Tables, R 734
- Operators for Matrices, R 224
- Operators for Row Vectors, R 215
- Optimization and Compiler Options, R 839
- options, R 831
 - command line, filenames, R 29
 - command line, internal, R 31
- options, under UNIX, R 27
- or, R 171
- Orbit, R 400, T 78
- OrbitFusions, R 810
- OrbitGenerators, N 16
- OrbitGeneratorsInv, N 17
- OrbitGeneratorsOfGroup, N 20
- OrbitishF0, E 49

OrbitLength, R 401
 OrbitLengths, R 401
 OrbitLengthsDomain, R 401
 OrbitPerms, R 416
 OrbitPowerMaps, R 805
 Orbits, E 48
 operation/attribute, R 401
 Orbits, *R 400*
 OrbitsDomain, R 401
 OrbitsishOperation, E 48
 OrbitsPerms, R 416
 OrbitStabChain, R 425
 OrbitStabilizer, R 402
 OrbitStabilizerAlgorithm, R 402
 Orbit Stabilizer Methods for Polycyclic Groups,
 R 451
 Order, R 296, T 78
 of a class function, R 774
 order, of a group, R 350
 of a list, collection or domain, R 274
 of the prime residue group, R 138
 OrderedPartitions, R 153
 ordered partitions, *E 55*
 ordering, booleans, R 171
 of records, R 266
 OrderingByLessThanFunctionNC, R 281
 OrderingByLessThanOrEqualFunctionNC, R 281
 OrderingOfRewritingSystem, R 345
 OrderingOnGenerators, R 283
 OrderingsFamily, R 281
 Orderings on families of associative words, *R 283*
 OrderMod, R 139
 OrderOfRewritingSystem, R 345
 OrdersClassRepresentatives, R 737
 OrdersTom, R 709
 Ordinal, R 259
 ordinary character, R 777
 OrdinaryCharacterTable, R 736
 OrthogonalComponents, R 790
 Orthogonal Embeddings, *R 248*
 OrthogonalEmbeddings, R 248
 OrthogonalEmbeddingsSpecialDimension, R 786
 OSX, R 841
 Other Filters, *R 125*
 Other Operations Applicable to any Object, *R 114*
 Other Operations for Character Tables, *R 745*
 Other Operations for Tables of Marks, *R 713*
 output, suppressing, R 64

OutputLogTo, R 95
 for streams, R 102
 stop logging output, R 95
 OutputTextFile, R 103
 OutputTextNone, R 106
 OutputTextString, R 104
 OutputTextUser, R 104
 overload, P 14

P

P, Property mark-up, E 16
p-group, R 368
 package, R 846
 Package Completion, *E 40*
 Package Interface - Obsolete Functions and Name
 Changes, *R 850*
 Packages, *R 835*
 PadicCoefficients, R 246
 PadicExtensionNumberFamily, R 695
 PadicNumber, R 695
 for pure padics, R 694
 PadicValuation, R 570
 Pager, R 25
 Parametrized, R 813
 Parametrized Maps, *R 811*
 parametrized maps, R 802
 Parent, R 291
 ParentPcgs, R 441
 Parents, *R 291*
 Parents and Subgroups, *T 83*
 PartialFactorization, R 133
 Partial Methods, *P 13*
 partial order, R 316
 PartialOrderByOrderingFunction, R 317
 PartialOrderOfHasseDiagram, R 316
 Partitions, R 153
 partitions, improper, of an integer, R 154
 ordered, of an integer, R 154
 restricted, of an integer, R 154
 PartitionsGreatestEQ, R 154
 PartitionsGreatestLE, R 154
 PartitionsSet, R 152
 PartitionTuples, R 155
 PcElementByExponents, R 439
 PcElementByExponentsNC, R 439
 PCentralLieAlgebra, R 651
 PCentralNormalSeriesByPcgsPGroup, R 446
 PCentralSeries, R 372

- PcGroupCode, R 462
- PcGroupCodeRec, R 462
- PcGroupFpGroup, R 455
- Pc groups versus fp groups, *R 455*
- PcGroupWithPcgs, R 457
- Pcgs, R 437
- Pcgs_OrbitStabilizer, R 451
- Pcgs and Normal Series, *R 445*
- PcgsByPcSequence, R 437
- PcgsByPcSequenceNC, R 437
- PcgsCentralSeries, R 445
- PcgsChiefSeries, R 446
- PcgsElementaryAbelianSeries, R 445
- PcgsPCentralSeriesPGroup, R 446
- PClassPGroup, R 369
- PCore, R 362
- PcSeries, R 438
- PerfectGroup, R 523
- perfect groups, R 523
- PerfectIdentification, R 524
- PerfectResiduum, R 364
- Perform, R 201
- Permanent, R 156
- Permanent of a Matrix, *R 156*
- PermBounds, R 799
- PermCharInfo, R 794
- PermCharInfoRelative, R 795
- PermChars, R 796
- PermCharsTom, R 722
- PermComb, R 799
- PermGroupOps.ElementProperty, T 78
- PermLeftQuoTransformation, R 557
- PermList, R 415
- PermListList, R 201
- Permutation, R 406
- PermutationCharacter, R 777
- permutation character, R 822
- permutation characters, possible, R 793
- PermutationCycle, R 406
- PermutationCycleOp, R 406
- PermutationGModule, R 697
- Permutation groups, *T 44*
- PermutationMat, R 228
- PermutationsFamily, R 412
- Permutations Induced by Elements and Cycles, *R 406*
- PermutationsList, R 151
- PermutationTom, R 708
- Permuted, R 202
 - as a permutation action, R 400
 - for class functions, R 774
- PGL, R 516
- PGU, R 516
- Phi, R 138
- Plain Lists, *T 27*
- Plain Records, *T 38*
- point stabilizer, R 402
- Polycyclic Generating Systems, *R 436*
- PolynomialByExtRep, R 690
- PolynomialByExtRepNC, R 690
- PolynomialCoefficientsOfPolynomial, R 675
- PolynomialDivisionAlgorithm, R 686
- Polynomial Factorization, *R 678*
- PolynomialModP, R 678
- PolynomialReducedRemainder, R 686
- PolynomialReduction, R 685
- PolynomialRing, R 681
- Polynomial Rings, *R 681*
- Polynomials, *T 85*
- Polynomials as Univariate Polynomials in one Indeterminate, *R 675*
- polynomials over abelian number fields, factors, R 593
- Polynomials over the Rationals, *R 678*
- PopOptions, R 88
- Portability, *R 90*
- Porting GAP, *R 840*
- Position, R 191, T 78
- Positional Objects, *P 22*
- PositionBound, R 193
- PositionCanonical, R 192
- PositionFirstComponent, R 194
- PositionNonZero, R 194
- PositionNot, R 194
- PositionNthOccurrence, R 192
- PositionProperty, R 193
- Positions, R 192
- PositionSet, R 193
- PositionsOp, R 192
- PositionSorted, R 192
- PositionStream, R 100
- PositionSublist, R 194
- Position vs. PositionCanonical, T 49
- PositionWord, R 335
- PositiveIntegers, R 126
- positive number, R 48

- PositiveRoots, R 647
- PositiveRootVectors, R 647
- PossibleClassFusions, R 809
- PossibleFusionsCharTableTom, R 721
- Possible Permutation Characters, *R 793*
- possible permutation characters, R 796
- PossiblePowerMaps, R 803
- power, R 48
 - matrix, R 225
 - meaning for class functions, R 773
 - of words, R 335
- PowerMap, R 803
- PowerMapByComposition, R 805
- PowerMapOp, R 803
- Power Maps, *R 802*
- PowerMapsAllowedBySymmetrizations, R 820
- PowerMod, R 572
- PowerModCoeffs, R 221
- PowerModInt, R 131
- PowerPartition, R 155
- powerset, R 149
- PowerSubalgebraSeries, R 624
- PQuotient, R 477
- precedence, R 48
- precedence test, for permutations, R 413
- PreferredGenerators, N 17
- PrefrattiniSubgroup, R 364
 - for groups with pcgs, R 451
- PreImage, R 309
- PreImageElm, R 309
- PreImages, R 309
- PreImagesElm, R 308
- Preimages in the Free Group, *R 465*
- Preimages in the Free Semigroup, *R 551*
- PreimagesOfTransformation, R 556
- PreImagesRange, R 308
- PreImagesRepresentative, R 309
- PreImagesSet, R 309
- Preimages under Homomorphisms from an FpGroup, *R 476*
- Preimages under Mappings, *R 308*
- preorder, R 316
- PresentationFpGroup, R 482
- PresentationNormalClosure, R 487
- PresentationNormalClosureRrs, R 487
- PresentationSubgroup, R 485
- PresentationSubgroupMtc, R 486
- PresentationSubgroupRrs, R 485
- PresentationViaCosetTable, R 483
- previous result, R 64
- PrevPrimeInt, R 132
- PrimaryGeneratorWords, R 486
- primary subgroup generators, R 500
- PrimeBlocks, R 742
- PrimeBlocksOp, R 742
- PrimeField, R 580
- Prime Integers and Factorization, *R 131*
- PrimePGroup, R 369
- PrimePowersInt, R 134
- prime residue group, R 138
 - exponent, R 139
 - generator, R 140
 - order, R 138
- Prime Residues, *R 138*
- PrimeResidues, function, R 138
- Primes, R 131
- primitive, R 408
- PRIMITIVE_INDICES_MAGMA, R 529
- PrimitiveElement, R 580
- PrimitiveGroup, R 528
- Primitive Groups, *R 418*
- PrimitiveGroupsIterator, R 528
- PrimitiveIdentification, R 529
- PrimitiveIndexIrreducibleSolvableGroup, R 530
- Primitive Permutation Groups, *R 527*
- PrimitivePolynomial, R 678
- PrimitiveRoot, R 588
- PrimitiveRootMod, R 140
- primitive root modulo an integer, R 140
- Primitive Roots and Discrete Logarithms, *R 139*
- Primitivity of Characters, *R 825*
- Print, R 66, T 78
- PrintAmbiguity, R 816
- PrintArray, R 229
- PrintCharacterTable, R 751
- PrintFactorsInt, R 134
- PrintFormattingStatus, R 102
- PrintHashWithNames, N 10
- Printing, Viewing and Displaying Finite Field Elements, *R 590*
- Printing Character Tables, *R 748*
- Printing Class Functions, *R 774*
- Printing Presentations, *R 488*
- Printing Tables of Marks, *R 706*
- PrintObj, R 67

- for character tables, R 774
- for tables of marks, R 706
- PrintTo, R 95, T 78
 - for streams, R 101
- ProbabilityShapes, R 679
- problems, R 837
- Problems on Particular Systems, R 839
- procedure call, R 50
- Procedure Calls, R 50
- procedure call with arguments, R 50
- Process, R 107
- Process, R 107
- PROD_GF2MAT_GF2MAT_ADVANCED, R 239
- PROD_GF2MAT_GF2MAT_SIMPLE, R 239
- Producing a Manual, E 26
- Product, R 205
- product, of words, R 335
 - rational functions, R 671
- ProductCoeffs, R 221
- ProductOfStraightLinePrograms, R 343
- ProductSpace, R 624
- ProductX, R 207
- ProfileFunctions, R 83
- ProfileGlobalFunctions, R 83
- ProfileMethods, R 82
- ProfileOperations, R 82
- ProfileOperationsAndMethods, R 82
- PROFILETHRESHOLD, R 83
- Profiling, R 82
- ProjectedInducedPcgs, R 444
- ProjectedPcElement, R 444
- Projection, N 18, R 306
 - example for direct products, R 505
 - example for semidirect products, R 507
 - example for subdirect products, R 508
 - example for wreath products, R 508
 - for group products, R 510
- ProjectionMap, R 812
- projections, find all, R 394
- ProjectiveActionHomomorphismMatrixGroup, R 431
- ProjectiveActionOnFullSpace, R 431
- ProjectiveGeneralLinearGroup, R 516
- ProjectiveGeneralUnitaryGroup, R 516
- ProjectiveOrder, R 238
- ProjectiveSpecialLinearGroup, R 516
- ProjectiveSpecialUnitaryGroup, R 516
- ProjectiveSymplecticGroup, R 516

- prompt, R 64
 - partial, R 64
- Properties, R 124
- Properties and Attributes for Lists, R 194
- Properties and Attributes of (General) Mappings, R 306
- Properties and Attributes of Binary Relations, R 315
- Properties and Attributes of Matrices, R 226
- Properties and Attributes of Rational Functions, R 672
- Properties and basic functionality, R 282
- Properties and Filters, T 73
- Properties of a Lie Algebra, R 645
- Properties of rewriting systems, R 347
- Properties of Rings, R 567
- Properties of Tables of Marks, R 712
- PRump, R 365
- PseudoRandom, R 278
- PSL, R 516
- PSP, R 516
- PSp, R 516
- PSU, R 516
- PthPowerImage, R 651
- PthPowerImages, R 651
- Pure p-adic Numbers, R 694
- PurePadicNumberFamily, R 694
- PushOptions, R 88

Q

- Quadratic, R 164
- quadratic residue, R 141
- QuaternionAlgebra, R 619
- QUIET, R 851
- QUIT, emergency quit, R 73
- quit, in emergency, R 73
- quit, R 68, T 18
- QUITTING, R 73
- QuoInt, R 129
- Quotient, R 563
- quotient, for finitely presented groups, R 464
 - matrices, R 225
 - matrix and matrix list, R 226
 - matrix and scalar, R 225
 - of free monoid, R 552
 - of free semigroup, R 550
 - of words, R 335
 - rational functions, R 671
 - scalar and matrix, R 225

- scalar and matrix list, R 226
- vector and matrix, R 225
- QuotientFromSCTable, R 618
- QuotientGroup, N 18
- QuotientGroupByChainHomomorphicImage, N 21
- QuotientGroupByHomomorphism, N 14
- QuotientGroupByImages, N 14
- QuotientGroupByImagesNC, N 14
- QuotientGroupHom, N 14
- Quotient Methods, *R 477*
- QuotientMod, R 572
- QuotientPolynomialsExtRep, R 691
- QuotientRemainder, R 571
- Quotients, *R 542*
- Quotients and Remainders, *R 129*
- QuotientSemigroupCongruence, R 542
- QuotientSemigroupHomomorphism, R 542
- QuotientSemigroupPreimage, R 542
- QuotRemLaurpols, R 680

R

- R, Representation mark-up, E 16
- r_N , R 162
- RadicalGroup, R 364
- RadicalOfAlgebra, R 627
- Random, R 136
 - [coll], R 277
 - for integers, R 129
 - for rationals, R 146
- RandomBinaryRelationOnPoints, R 317
- random element, of a list or collection, R 277
- Random Elements, *R 277*
- RandomHashKey, N 10
- RandomInvertibleMat, T 79
- RandomInvertibleMat, R 230
- RandomIsomorphismTest, R 462
- Random Isomorphism Testing, *R 462*
- Randomized Methods for Permutation Groups, *R 420*
- RandomList, R 278
- RandomMat, R 230
- Random Matrices, *R 230*
- RandomPrimitivePolynomial, R 590
- RandomSchreierSims, N 20
- random seed, R 278
- RandomSource, R 137
- Random Sources, *R 136*
- RandomTransformation, R 555
- RandomUnimodularMat, R 230
- Range, N 15, R 307
- range, R 207
- Ranges, *R 207, T 32*
- RankAction, R 407
- RankFilter, R 117
- RankMat, R 230
- RankOfTransformation, R 556
- RankPGroup, R 369
- Rat, R 146
 - for strings, R 258
- RationalClass, R 361
- RationalClasses, R 362
- RationalFunctionByExtRep, R 690
- RationalFunctionByExtRepNC, R 690
- RationalFunctionByExtRepWithCancellation, R 691
- Rational Function Families, *R 687*
- RationalFunctionsFamily, R 687
- RationalizedMat, R 166
- Rationals, R 145
- RClassOfHClass, R 543
- Read, R 94, T 19
 - for streams, R 99
- read.g, for a GAP package, E 38
- ReadAll, R 99
- ReadAllLine, R 105
- ReadAsFunction, R 94
 - for streams, R 99
- ReadByte, R 99
- read eval print loop, R 64
- read evaluate print loop, *T 19*
- reading source code from a file, T 19
- ReadLine, R 99
- README, for a GAP package, E 36
- ReadPackage, R 847
- ReadPkg, R 850
- ReadTest, R 84
 - for streams, R 99
- RealClasses, R 740
- RealizableBrauerCharacters, R 800
- RealPart, R 164
- RecFields, T 79
- RecNames, R 262
- Recognizing Characters, *R 254*
- record, component access, R 263
 - component assignment, R 263
 - component variable, R 263

- component variable assignment, R 264
- Record Access Operations, *R 267*
- Record Assignment, *R 263*
- record assignment, operation, R 267
- record boundness test, operation, R 267
- record component, operation, R 267
- record unbind, operation, R 267
- Recovery from NoMethodFound-Errors, *R 77*
- Recursion, *T 42*
- recursion, R 55
- Redispatching, *P 13*
- RedispatchOnCondition, *P 13*
- redisplay a help section, R 23
- redisplay with next help viewer, R 23
- ReduceCoeffs, R 221
- ReduceCoeffsMod, R 221
- ReducedAdditiveInverse, R 346
- ReducedCharacters, R 784
- ReducedClassFunctions, R 784
- ReducedComm, R 346
- ReducedConfluentRewritingSystem, R 553
- ReducedConjugate, R 346
- ReducedDifference, R 346
- ReducedForm, R 345
- ReducedGroebnerBasis, R 687
- ReducedInverse, R 346
- ReducedLeftQuotient, R 346
- ReducedOne, R 346
- ReducedPcElement, R 439
- ReducedPower, R 346
- ReducedProduct, R 346
- ReducedQuotient, R 346
- ReducedScalarProduct, R 346
- ReducedSum, R 346
- ReducedZero, R 346
- ReduceRules, R 346
- ReduceStabChain, R 426
- Reducing Virtual Characters, *R 784*
- Ree, R 513
- ReeGroup, R 513
- ReesCongruenceOfSemigroupIdeal, R 541
- ReesMatrixSemigroup, R 544
- ReesMatrixSemigroupElement, R 545
- Rees Matrix Semigroups, *R 544*
- ReesZeroMatrixSemigroup, R 544
- ReesZeroMatrixSemigroupElement, R 545
- ReesZeroMatrixSemigroupElementIsZero, R 545
- reference to a label, E 15
- RefinedPcGroup, R 457
- ReflectionMat, R 229
- ReflexiveClosureBinaryRelation, R 317
- reflexive relation, R 315
- regular, R 407
- regular action, R 404
- RegularActionHomomorphism, R 405
- RegularModule, R 754
- relations, R 304
- Relations Between Domains, *R 298*
- RelationsOfFpSemigroup, R 551
- RelativeBasis, R 603
- RelativeBasisNC, R 603
- relatively prime, R 48
- RelativeOrderOfPcElement, R 439
- RelativeOrders, of a pcgs, R 438
- Relators in a Presentation, *R 488*
- RelatorsOfFpGroup, R 465
- remainder, operation, R 297
- remainder of a quotient, R 129
- RemInt, R 129
- Remove, R 178
- remove, an element from a set, R 198
- RemoveCharacters, R 256
- RemoveFile, R 96
- RemoveOuterCoeffs, R 219
- RemoveRelator, R 490
- RemoveSet, R 198
- RemoveStabChain, R 426
- Repeat, *R 52*
- repeat loop, R 52
- ReplacedString, R 256
- Representation, *R 120*
- representation, as a sum of two squares, R 144
- Representations for Associative Words, *R 337*
- Representations for Group Homomorphisms, *R 396*
- Representations given by modules, *R 754*
- Representations of Algebras, *R 632*
- RepresentationsOfObject, R 121
- Representative, R 274
- representative, of a list or collection, R 275
- RepresentativeAction, R 403
- RepresentativeLinearOperation, R 632
- RepresentativeOperation, R 850
- RepresentativesContainedRightCosets, R 359
- RepresentativesFusions, R 810
- RepresentativeSmallest, R 275
- RepresentativesMinimalBlocks, R 408

- RepresentativesPerfectSubgroups, R 377
- RepresentativesPowerMaps, R 805
- RepresentativesSimpleSubgroups, R 377
- RepresentativeTom, R 720
- RepresentativeTomByGenerators, R 720
- RepresentativeTomByGeneratorsNC, R 720
- Requesting one GAP Package from within Another, *E 37*
- RequirePackage, R 850
- Reread, R 96
- REREADING, R 96
- RereadPackage, R 847
- RereadPkg, R 850
- Reset, R 136
- ResetFilterObj, P 18
- ResetOptionsStack, R 88
- residue, quadratic, R 141
- Residue Class Rings, *R 134*
- RespectsAddition, R 312
- RespectsAdditiveInverses, R 312
- RespectsInverses, R 311
- RespectsMultiplication, R 311
- RespectsOne, R 311
- RespectsScalarMultiplication, R 312
- RespectsZero, R 312
- RestoreStateRandom, R 277
- Restricted and Induced Class Functions, *R 782*
- RestrictedClassFunction, R 782
- RestrictedClassFunctions, R 782
- Restricted Lie algebras, *R 650*
- RestrictedMapping, R 306
- RestrictedPartitions, R 154
- RestrictedPerm, R 415
- RestrictedPermNC, R 415
- RestrictedTransformation, R 556
- RestrictOutputsOfSLP, R 342
- Resultant, R 676
- ResultOfStraightLineProgram, R 340
- Return, *R 58*
- return, R 68
 - no value, R 58
 - with value, R 58
- ReturnFail, R 63
- ReturnFalse, R 63
- return from break loop, R 68
- ReturnTrue, R 63
- Reversed, R 200
- RewindStream, R 100
- RewriteWord, R 471
- Rewriting in Groups and Monoids, *R 347*
- Rewriting Systems and the Knuth-Bendix Procedure, *R 553*
- RightActingAlgebra, R 635
- RightActingRingOfIdeal, R 566
- RightAlgebraModule, R 633
- RightAlgebraModuleByGenerators, R 633
- RightCoset, R 357
- RightCosets, R 358
- right cosets, R 357
- RightCosetsNC, R 358
- RightDerivations, R 642
- RightIdeal, R 564
- RightIdealByGenerators, R 565
- RightIdealNC, R 565
- RightModuleByHomomorphismToMatAlg, R 636
- RightShiftRowVector, R 219
- RightTransversal, R 358
- right transversal, T 48
- Ring, R 562
- RingByGenerators, R 563
- Ring Homomorphisms, *R 313*
- Rings With One, *R 566*
- RingWithOne, R 566
- RingWithOneByGenerators, R 567
- RNameObj, R 267
- root, of 1 modulo an integer, R 142
 - of an integer, R 128
 - of an integer, smallest, R 128
 - of an integer modulo another, R 141
- RootInt, R 128
- RootMod, R 141
- RootOfDefiningPolynomial, R 580
- RootsMod, R 141
- Roots Modulo Integers, *R 140*
- roots of unity, R 157
- RootsOfUPol, R 675
- RootsUnityMod, R 142
- RootSystem, R 647
- RoundCyc, R 159
- Row and Matrix Spaces, *R 607*
- RowIndexOfReesMatrixSemigroupElement, R 545
- RowIndexOfReesZeroMatrixSemigroupElement, R 545
- row spaces, R 607
- Row Vectors over Finite Fields, *R 217*
- Rules, R 345

Running GAP under MacOS, *R 31*

Runtime, *R 82*

Runtimes, *R 81*

S

s_N , *R 162*

SameBlock, *R 743*

SandwichMatrixOfReesMatrixSemigroup, *R 545*

SandwichMatrixOfReesZeroMatrixSemigroup,
R 545

save, *R 37*

SaveOnExitFile, *R 73*

SaveWorkspace, *R 37*

Saving and Loading a Workspace, *R 37*

Saving a Pc Group, *R 458*

saving on exit, *R 73*

ScalarProduct, for characters, *R 778*

Schreier, *R 485*

Schreier-Sims, random, *R 420*

SchreierTransversal, *N 16*

SchreierTreeDepth, *N 17*

SchurCover, *R 383*

Schur Covers and Multipliers, *R 383*

Schur multiplier, *R 383*

scope, *R 43*

ScriptFromString, *R 717*

Searching for Homomorphisms, *R 394*

SecHMSM, *R 260*

secondary subgroup generators, *R 500*

SecondsDMYhms, *R 260*

SeekPositionStream, *R 100*

Selecting a Different MeatAxe, *R 698*

Selection Functions, *R 518*

SemidirectProduct, *R 506*

Semidirect Products, *R 506*

SemiEchelonBasis, *R 609*

SemiEchelonBasisNC, *R 609*

SemiEchelonMat, *R 232*

SemiEchelonMatDestructive, *R 233*

SemiEchelonMats, *R 233*

SemiEchelonMatsDestructive, *R 233*

SemiEchelonMatTransformation, *R 233*

Semigroup, *R 539*

semigroup, *R 539*

SemigroupByGenerators, *R 539*

SemigroupByMultiplicationTable, *R 540*

SemigroupIdealByGenerators, *R 541*

SemigroupOfRewritingSystem, *R 554*

semiregular, *R 407*

Semisimple Lie Algebras and Root Systems, *R 646*

SemiSimpleType, *R 646*

sequence, Bernoulli, *R 148*

Fibonacci, *R 155*

Lucas, *R 156*

Series of Ideals, *R 644*

Set, *R 271*

SetAssertionLevel, *R 81*

SetCommutator, *R 456*

SetConjugate, *R 456*

SetCrystGroupDefaultAction, *R 435*

set difference, of collections, *R 276*

SetElmWPObj, *E 52*

SetEntrySCTable, *R 617*

SetFilterObj, *P 18*

SetGasmanMessageStatus, *R 87*

SetHashEntry, *N 12*

SetHashEntryAtLastIndex, *N 12*

SetHelpViewer, *R 24*

SetIndeterminateName, *R 670*

SetInfoLevel, *R 80*

SetName, *R 114*

Set Operations via Boolean Lists, *R 212*

SetParent, *R 291*

SetPower, *R 456*

SetPrintFormattingStatus, *R 102*

SetRecursionTrapInterval, *R 86*

SetReducedMultiplication, *R 465*

Sets, *R 110, T 31*

sets, *R 173*

Sets of Subgroups, *R 374*

set stabilizer, *R 402*

Setter, *R 122*

setter, *R 122*

of an attribute, *T 72*

Setter and Tester for Attributes, *R 122*

SetX, *R 207*

ShallowCopy, *R 113, T 80*

for lists, *R 181*

ShiftedCoeffs, *R 221*

ShiftedPadicNumber, *R 694*

Shifting and Trimming Coefficient Lists, *R 219*

ShortestVectors, *R 248*

ShortLexOrdering, *R 284*

short vectors spanning a lattice, *R 785*

ShowArgument, *R 77*

ShowArguments, *R 77*

- ShowDetails, R 77
- ShowImpliedFilters, R 118
- ShowMethods, R 78
- ShowOtherMethods, R 78
- ShrinkAllocationPlist, R 183
- ShrinkAllocationString, R 253
- ShrinkCoeffs, R 222
- ShrinkRowVector, R 219
- Sift, for chains of subgroups, N 19
- SiftedPcElement, R 439
- SiftedPermutation, R 425
- SiftedVector, R 610
- SiftOneLevel, for chains of subgroups, N 19
 - for subgroup transversals, N 16
- Sigma, R 142
- sign, of an integer, R 127
- Sign and Cycle Structure, R 414
- SignInt, R 127
- SignPartition, R 154
- SignPerm, R 414
- SimpleLieAlgebra, R 642
- SimpleSystem, R 647
- SimplifiedFpGroup, R 484
- SimplifiedFpGroup, R 484
- SimplifyPresentation, R 491
- SimsNo, R 529
- SimultaneousEigenvalues, R 239
- SingleCollector, R 456
- singlequote character, R 252
- singlequotes, R 250
- SINT_CHAR, R 258
- Size, R 274
 - for character tables, R 736
 - for groups with pcgs, R 451
- size, of a list or collection, R 274
- SizeBlist, R 212
- SizeConsiderFunction, R 379
- SizeNumbersPerfectGroups, R 524
- SizeOfChainOfGroup, N 20
- SizeOfFieldOfDefinition, R 800
- SizesCentralizers, R 737
- SizesConjugacyClasses, R 737
- SizeScreen, R 76
- SizeScreen, R 76
- SizesPerfectGroups, R 523
- SizeStabChain, R 424
- SL, R 514
- smaller, associative words, R 334
 - elements of finitely presented groups, R 465
 - nonassociative words, R 328
 - pcwords, R 454
 - rational functions, R 672
- SmallerDegreePermutationRepresentation, R 417
- smaller or equal, R 47
- smaller test, R 47
- SmallestGeneratorPerm, R 413
- SmallestMovedPoint, R 413
- SmallestRootInt, R 128
- SmallGeneratingSet, R 380
- SmallGroup, R 521
- Small Groups, R 520
- SmallGroupsInformation, R 521
- Smash MeatAxe Flags, R 702
- smith normal form, R 851
- SmithNormalFormIntegerMat, R 243
- SmithNormalFormIntegerMatTransforms, R 243
- SMTX.AbsoluteIrreducibilityTest, R 701
- SMTX.AlgEl, R 702
- SMTX.AlgElCharPol, R 702
- SMTX.AlgElCharPolFac, R 702
- SMTX.AlgElMat, R 702
- SMTX.AlgElNullspaceDimension, R 702
- SMTX.AlgElNullspaceVec, R 702
- SMTX.CentMat, R 702
- SMTX.CentMatMinPoly, R 702
- SMTX.CompleteBasis, R 701
- SMTX.Getter, R 701
- SMTX.GoodElementGModule, R 701
- SMTX.IrreducibilityTest, R 701
- SMTX.MatrixSum, R 701
- SMTX.MinimalSubGModule, R 701
- SMTX.MinimalSubGModules, R 701
- SMTX.RandomIrreducibleSubGModule, R 701
- SMTX.Setter, R 701
- SMTX.SortHomGModule, R 701
- SMTX.Subbasis, R 702
- SO, R 515
- Socle, R 365
- SocleTypePrimitiveGroup, R 418
- SolutionIntMat, R 241
- SolutionMat, R 231
- SolutionMatDestructive, R 231
- SolutionNullspaceIntMat, R 241
- Some Remarks about Character Theory in GAP, R 725

- Some Special Algebras, *R 619*
- Something, *T 70*
- Sort, *R 196*
- SortedCharacters, *R 761*
- SortedCharacterTable, *R 762*
- Sorted Character Tables, *R 761*
- SortedList, *R 271*
- sorted list, *R 195*
- Sorted Lists and Sets, *R 197*
- sorted lists as collections, *R 269*
- SortedSparseActionHomomorphism, *R 404*
- SortedTom, *R 707*
- Sortex, *R 196*
- Sorting Lists, *R 196*
- SortingPerm, *R 197*
- Sorting Tables of Marks, *R 707*
- SortParallel, *R 196*
- Source, *N 15*, *R 307*
- SourceElt, *N 14*
- SourceOfIsoclinicTable, *R 760*
- SP, *R 515*
- Sp, *R 515*
- space, *R 41*
- SparseActionHomomorphism, *R 404*
- SparseCartanMatrix, *R 648*
- SparseHashTable, *N 11*
- Sparse hash tables, *N 11*
- SparseIntKey, *N 11*
- Special Characters, *R 252*
- special character sequences, *R 252*
- Special Filenames, *R 93*
- Special Generating Sets, *R 380*
- SpecialLinearGroup, *R 514*
- Special Multiplication Algorithms for Matrices over $\text{GF}(2)$, *R 239*
- SpecialOrthogonalGroup, *R 515*
- Special Pcgs, *R 448*
- SpecialPcgs, attribute, *R 448*
- Special Rules for Input Lines, *R 65*
- SpecialUnitaryGroup, *R 515*
- Specific and Parametrized Subgroups, *R 363*
- Specific Methods for Subgroup Lattice Computations, *R 377*
- SplitCharacters, *R 756*
- SplitExtension, *R 460*
- SplitExtensions, *R 461*
- SplitString, *R 255*
- SplittingField, *R 674*
- Sqrt, *R 297*
- square root, of an integer, *R 128*
- SquareRoots, *R 325*
- SSortedList, *R 271*
- StabChain, *R 422*
- StabChainBaseStrongGenerators, *R 423*
- StabChainImmutable, *R 422*
- StabChainMutable, *R 422*
- StabChainOp, *R 422*
- StabChainOptions, *R 423*
- Stabiliser chain subgroups, *N 20*
- Stabilizer, *R 402*
- Stabilizer Chain Records, *R 423*
- Stabilizer Chains, *R 419*
- Stabilizer Chains for Automorphisms Acting on Enumerators, *E 61*
- StabilizerOfExternalSet, *R 410*
- StabilizerPcgs, *R 451*
- Stabilizers, *R 402*
- Standalone Programs in a GAP Package, *E 38*
- StandardAssociate, *R 569*
- StandardGeneratorsFunctions, *R 717*
- StandardGeneratorsInfo, for groups, *R 716*
for tables of marks, *R 721*
- StandardGeneratorsOfGroup, *R 718*
- Standard Generators of Groups, *R 716*
- Standardization of coset tables, *R 470*
- StandardizeTable, *R 470*
- StarCyc, *R 164*
- Starting and Leaving GAP, *T 18*
- starting GAP, *T 18*
- State, *R 136*
- Statements, *R 49*
- StateRandom, *R 277*
- Stirling1, *R 148*
- Stirling2, *R 149*
- Stirling number of the first kind, *R 148*
- Stirling number of the second kind, *R 149*
- StoredGroebnerBasis, *R 687*
- StoreFusion, *R 808*
- Storing Normal Subgroup Information, *R 766*
- StraightLineProgElm, *R 343*
- StraightLineProgGens, *R 344*
- StraightLineProgram, *R 339*
- Straight Line Program Elements, *R 343*
- StraightLineProgramNC, *R 339*
- Straight Line Programs, *R 339*
- StraightLineProgramsTom, *R 719*

- StratMeetPartition, E 59
- StreamsFamily, R 98
- StretchImportantSLPElement, R 344
- strictly sorted list, R 195
- String, R 255
 - for cyclotomics, R 159
- StringDate, R 260
- StringOfResultOfStraightLineProgram, R 341
- StringPP, R 255
- strings, T 29
 - equality of, R 254
 - inequality of, R 254
 - lexicographic ordering of, R 254
- String Streams, R 104
- StringTime, R 260
- StrongGeneratorsStabChain, R 425
- StrongGens, N 20
- StronglyConnectedComponents, R 317
- Struct, R 288
- StructByGenerators, R 289
- StructuralCopy, R 113, T 80
 - for lists, R 181
- structure constant, R 747
- StructureConstantsTable, R 605
- StructureDescription, R 355
- Structure Descriptions, R 355
- StructWithGenerators, R 289
- SU, R 515
- Subalgebra, R 620
- SubAlgebraModule, R 636
- SubalgebraNC, R 620
- Subalgebras, R 620
- SubalgebraWithOne, R 620
- SubalgebraWithOneNC, R 621
- SubdirectProduct, R 508
- Subdirect Products, R 508
- SubdirectProducts, R 508
- Subdomains, T 71
- subdomains, R 292
- Subfield, R 580
- SubfieldNC, R 580
- Subfields, R 580
- Subfields of Fields, R 580
- Subgroup, R 352
- SubgroupByPcgs, R 442
- SubgroupByProperty, R 353
- subgroup fusions, R 806
- subgroup generators tree, R 500
- Subgroup Lattice, R 375
- SubgroupNC, R 352
- SubgroupOfWholeGroupByCosetTable, R 471
- SubgroupOfWholeGroupByQuotientSubgroup, R 476
- Subgroup Presentations, R 485
- SubgroupProperty, R 427
- Subgroups, Subgroups, as Stabilizers, T 50
- Subgroups, R 352
- subgroups, polyhedral, R 747
- Subgroups characterized by prime powers, R 366
- Subgroup Series, R 370
- SubgroupShell, R 353
- Subgroups of Polycyclic Groups - Canonical Pcgs, R 442
- Subgroups of Polycyclic Groups - Induced Pcgs, R 441
- SubgroupsSolvableGroup, R 378
- sublist, R 175
 - access, R 175
 - assignment, R 177
 - operation, R 176
- sublist assignment, operation, R 178
- Submagma, R 321
- SubmagmaNC, R 321
- SubmagmaWithInverses, R 321
- SubmagmaWithInversesNC, R 321
- SubmagmaWithOne, R 321
- SubmagmaWithOneNC, R 321
- Submodule, R 575
- SubmoduleNC, R 575
- Submodules, R 575
- Submonoid, R 546
- SubmonoidNC, R 546
- SubnearAdditiveGroup, R 560
- SubnearAdditiveGroupNC, R 560
- SubnearAdditiveMagma, R 560
- SubnearAdditiveMagmaNC, R 560
- SubnearAdditiveMagmaWithZero, R 560
- SubnearAdditiveMagmaWithZeroNC, R 560
- SubnormalSeries, R 370
- Subring, R 563
- SubringNC, R 563
- SubringWithOne, R 567
- SubringWithOneNC, R 567
- Subroutines for the Construction of Class Fusions, R 821

- Subroutines for the Construction of Power Maps,
 R 819
- subsection mark-up, *E 16*
- Subsemigroup, *R 539*
- SubsemigroupNC, *R 539*
- subsets, *R 149*
- subset test, for collections, *R 275*
- Subsomething, *T 71*
- SubsomethingNC, *T 71*
- Subspace, *R 599*
- SubspaceNC, *R 599*
- Subspaces, *R 601*
- SubstitutedWord, *R 336*
- SubsTom, *R 709*
- Substruct, *R 292*
- SubstructNC, *R 292*
- SubSyllables, *R 337*
- subtract, a set from another, *R 199*
- SubtractBlist, *R 213*
- subtraction, *R 48*
 - matrices, *R 224*
 - matrix and scalar, *R 224*
 - rational functions, *R 671*
 - scalar and matrix, *R 224*
 - scalar and matrix list, *R 226*
 - scalar and vector, *R 216*
 - vector and scalar, *R 216*
 - vectors, *R 216*
- SubtractSet, *R 199*
- Subword, *R 335*
- Successors, *R 316*
- Suitability for Compilation, *R 36*
- Sum, *R 205*
- Sum and Intersection of Pcgs, *R 447*
- SumFactorizationFunctionPcgs, *R 447*
- SumIntersectionMat, *R 234*
- SumX, *R 207*
- SupersolvableResiduum, *R 365*
- support, email address, *R 838*, *T 16*
- SupportedCharacterTableInfo, *R 729*
- Suppressing Indexing and Labelling of a Section and
 Resolving Label Clashes, *E 15*
- SurjectiveActionHomomorphismAttr, *R 411*
- SuzukiGroup, *R 513*
- SylowComplement, *R 365*
- SylowSubgroup, *R 365*
- Sylow Subgroups and Hall Subgroups, *R 365*
- SylowSystem, *R 366*
- Symbols, *R 40*
- Symmetric and Alternating Groups, *R 417*
- SymmetricClosureBinaryRelation, *R 317*
- SymmetricGroup, *R 513*
- symmetric group, powermap, *R 155*
- SymmetricParentGroup, *R 418*
- SymmetricParts, *R 790*
- SymmetricPowerOfAlgebraModule, *R 661*
- symmetric relation, *R 316*
- Symmetrizations, *R 790*
- symmetrizations, orthogonal, *R 790*
 - symplectic, *R 791*
- Symmetrizations of Class Functions, *R 790*
- SymplecticComponents, *R 791*
- SymplecticGroup, *R 515*
- syntax errors, *R 64*
- system getter, *R 121*
- system setter, *R 121*
- Sz, *R 513*
- T**
- t_N , *R 162*
- TableAutomorphisms, *R 764*
- table automorphisms, *R 822*
- TableHasIntKeyFun, *N 11*
- table of chapters for help books, *R 23*
- TableOfMarks, *R 704*
- TableOfMarksByLattice, *R 705*
- TableOfMarksComponents, *R 708*
- TableOfMarksCyclic, *R 723*
- TableOfMarksDihedral, *R 723*
- TableOfMarksFamily, *R 708*
- TableOfMarksFrobenius, *R 723*
- Table of Marks Objects in GAP, *R 704*
- table of sections for help books, *R 23*
- tables, *E 23*, *R 727*
- Tables, Displayed Mathematics and Mathematics
 Alignments, *E 23*
- tabulator, *R 41*
- Tau, *R 142*
- Technical Details about Tables of Marks, *R 708*
- Technical Details about the Implementation of
 Magma Rings, *R 667*
- Technical Matters Concerning General Mappings,
 R 313
- TemporaryGlobalVarName, *R 46*
- Tensored, *R 781*
- TensorProductGModule, *R 697*

- TensorProductOfAlgebraModules, R 660
- Tensor Products and Exterior and Symmetric Powers, *R 660*
- test, for a primitive root, R 140
 - for a rational, R 145
 - for records, R 262
 - for set equality, R 198
- TestConsistencyMaps, R 815
- Tester, R 122
- tester, R 122
 - of an attribute, T 72
- Test Files, *R 84*
- Test for the Existence of GAP Package Binaries, *E 39*
- TestHomogeneous, R 825
- TestInducedFromNormalSubgroup, R 827
- Testing Finiteness of Finitely Presented Groups, *R 480*
- Testing for the System Architecture, *R 35*
- Testing Monomiality, *R 827*
- Testing the Examples, *E 24*
- TestJacobi, R 617
- TestMonomial, R 827
- TestMonomialQuick, R 828
- TestMonomialUseLattice, R 828
- Test of the installation, *R 834*
- TestPackageAvailability, R 848
- TestPerm1, R 797
- TestPerm2, R 797
- TestPerm3, R 797
- TestPerm4, R 797
- TestPerm5, R 797
- TestQuasiPrimitive, R 826
- TestRelativelySM, R 829
- Tests for Actions, *R 407*
- Tests for the Availability of Methods, *R 384*
- TestSubnormallyMonomial, R 829
- TeX Macros, *E 16*
- TeX Macros for Domains, *E 20*
- The .gaprc file, *R 33*
- The Adjoint Representation, *R 652*
- The Compiler, *R 35*
- The Defining Attributes of Rational Functions, *R 689*
- The Dixon-Schneider Algorithm, *R 754*
- The Documentation, *R 836*
- The External Representation for Associative Words, *R 339*
- The family pcgs, *R 454*
- The Files of a GAP Package, *E 35*
- The GAP System, *T 10*
- The GASMAN Interface for Weak Pointer Objects, *E 53*
- The General Backtrack Algorithm with Ordered Partitions, *E 55*
- The Help Book Handler, *E 43*
- The Info Mechanism, *T 85*
- The Interface between Character Tables and Groups, *R 731*
- The Interface between Tables of Marks and Character Tables, *R 721*
- The Library of Tables of Marks, *R 724*
- The Main File, *E 11*
- The manual.six File, *E 43*
- then, R 51
- The Natural Action, *R 416*
- The PackageInfo.g File, *E 37*
- The Pager Command, *R 25*
- The Permutation Image of an Action, *R 403*
- The Representations of Rational Functions, *R 688*
- The Smash MeatAxe, *R 701*
- The Syntax in BNF, *R 59*
- The WWW Homepage of a Package, *E 37*
- ThreeGroup library, R 521
- Tietze Options, *R 503*
- Tietze Transformations, *R 490*
- Tietze Transformations that introduce new Generators, *R 495*
- TietzeWordAbstractWord, R 488
- time, R 82
- Timing, *R 81*
- Todd-Coxeter Procedure, *R 554*
- Trace, R 227
 - for field elements, R 582
 - of a matrix, R 227
- TracedCosetFpGroup, R 468
- TraceImmediateMethods, R 79
- TraceMat, R 227
- TraceMethods, R 79, T 75
- TracePolynomial, R 581
- Tracing generator images through Tietze transformations, *R 498*
- Tracing Methods, *R 79*
- TransferDiagram, R 815
- Transformation, R 555
- TransformationData, R 555

- TransformationFamily, R 555
- TransformationNC, R 555
- TransformationRelation, R 557
- TransformationType, R 555
- TransformingPermutations, R 764
- TransformingPermutationsCharacterTables, R 765
- transitive, R 407
- TransitiveClosureBinaryRelation, R 317
- TransitiveGroup, R 519
- TransitiveIdentification, R 519
- Transitive Permutation Groups, *R 519*
- transitive relation, R 316
- Transitivity, for characters, R 780
 - for class functions, R 780
 - for group actions, R 407
- TranslatorSubalgebra, R 639
- transporter, R 403
- TransposedMat, R 228
- TransposedMatAttr, R 228
- TransposedMatDestructive, R 229
- TransposedMatImmutable, R 228
- TransposedMatMutable, R 228
- TransposedMatOp, R 228
- TransposedMatrixGroup, R 430
- Transversal, N 19
- TransversalBySiftFunction, N 18
- TransversalByTrivial, N 18
- TransversalElt, N 16
- TransversalOfChainSubgroup, N 20
- Transversals, *R 358*
- Transversals by direct products, *N 18*
- Transversals by homomorphic images, *N 17*
- Transversals by Schreier tree, *N 16*
- Transversals by sift functions, *N 18*
- Transversals by Trivial subgroups, *N 18*
- Triangular Matrices, *R 235*
- TriangulizedIntegerMat, R 242
- TriangulizedIntegerMatTransform, R 242
- TriangulizedNullspaceMat, R 230
- TriangulizedNullspaceMatDestructive, R 230
- TriangulizeIntegerMat, R 242
- TriangulizeMat, R 230
- Trivial chain subgroups and sift function chain subgroups, *N 21*
- TrivialCharacter, R 776
- TrivialGroup, R 511
- TrivialIterator, R 280
- TrivialSubalgebra, R 621
- TrivialSubgroup, R 363
- TrivialSubmagmaWithOne, R 325
- TrivialSubmodule, R 575
- TrivialSubmonoid, R 546
- TrivialSubnearAdditiveMagmaWithZero, R 560
- TrivialSubspace, R 600
- TryCosetTableInWholeGroup, R 471
- TryGcdCancelExtRepPolynomials, R 691
- TryNextMethod, P 13, T 74
- Tuples, R 151
- tuple stabilizer, R 402
- TwoClosure, R 427
- TwoCoboundaries, R 459
- TwoCocycles, R 459
- TwoCohomology, R 459
- TwoGroup library, R 521
- TwoSidedIdeal, R 564
- TwoSidedIdealByGenerators, R 565
- TwoSidedIdealNC, R 565
- TwoSquares, R 144
- type, boolean, R 170
 - cyclotomic, R 157
 - records, R 262
 - strings, R 250
- TypeObj, R 125
- TypeOfDefaultGeneralMapping, R 314
- Types, *R 125*
- TzEliminate, R 493
- TzFindCyclicJoins, R 494
- TzGo, R 491
- TzGoGo, R 492
- TzImagesOldGens, R 499
- TzInitGeneratorImages, R 498
- TzNewGenerator, R 490
- TzOptions, R 503
- TzPreImagesNewGens, R 499
- TzPrint, R 489
- TzPrintGeneratorImages, R 499
- TzPrintGenerators, R 488
- TzPrintLengths, R 489
- TzPrintOptions, R 504
- TzPrintPairs, R 489
- TzPrintPresentation, R 489
- TzPrintRelators, R 488
- TzPrintStatus, R 489
- TzSearch, R 493
- TzSearchEqual, R 494

TzSort, R 482
 TzSubstitute, R 495
 TzSubstituteCyclicJoins, R 498

U

u_N , R 162
 UglyVector, R 613
 Umlauts, *E 26*
 Unbind, R 44
 for lists, R 179
 UnbindElmWPObj, E 52
 UnbindGlobal, R 45
 UnderlyingCharacteristic, R 738
 UnderlyingCharacterTable, R 770
 UnderlyingElement, fp group elements, R 466
 fp semigroup elements, R 552
 UnderlyingElementOfReesMatrixSemigroup-
 Element, R 545
 UnderlyingElementOfReesZeroMatrixSemigroup-
 Element, R 545
 UnderlyingExternalSet, R 411
 UnderlyingFamily, R 641
 UnderlyingGeneralMapping, R 307
 UnderlyingGroup, for character tables, R 732
 for tables of marks, R 710
 UnderlyingLeftModule, R 603
 UnderlyingLieAlgebra, R 647
 UnderlyingMagma, R 664
 UnderlyingRelation, R 307
 Undocumented Variables, *E 33*
 UnInstallCharReadHookFunc, R 106
 Union, R 276
 union, of collections, R 276
 of sets, R 198
 Union2, R 276
 UnionBlist, R 212
 Unique, R 200
 UniteBlist, R 213
 UniteBlistList, R 213
 UniteSet, R 198
 Units, R 568
 Units and Factorizations, *R 568*
 UnivariatenessTestRationalFunction, R 675
 UnivariatePolynomial, R 674
 UnivariatePolynomialByCoefficients, R 674
 UnivariatePolynomialRing, R 683
 Univariate Polynomial Rings, *R 683*
 Univariate Polynomials, *R 674*

UnivariateRationalFunctionByCoefficients,
 R 680
 Univariate Rational Functions, *R 680*
 UniversalEnvelopingAlgebra, R 653
 Universal Enveloping Algebras, *R 653*
 UNIX, features, R 27
 options, R 27
 UNIXSelect, R 98
 Unknown, R 168
 UnloadSmallGroupsData, R 522
 UnorderedTuples, R 150
 Unpacking, *R 832*
 UnprofileFunctions, R 83
 UnprofileMethods, R 83
 until, R 52
 UntraceMethods, R 79
 UpdateMap, R 813
 UpEnv, R 71
 UpperCentralSeriesOfGroup, R 372
 UpperSubdiagonal, R 235
 Usage of the Percent Symbol, *E 24*
 UseBasis, R 577
 UseFactorRelation, R 298
 Useful Categories for all Elements of a Family, *R 302*
 Useful Categories of Elements, *R 300*
 UseIsomorphismRelation, R 298
 User Streams, *R 103*
 UseSubsetRelation, R 298
 Using buildman.pe, *E 27*
 utilities for editing GAP files, R 75

V

V, (global) Variable mark-up, E 16
 v_N , R 162
 Valuation, R 694
 Value, R 677
 ValueCochain, R 656
 ValueGlobal, R 45
 ValueMolienSeries, R 793
 ValueOption, R 89
 ValuePol, R 221
 ValuesOfClassFunction, R 770
 Variable Access in a Break Loop, *R 71*
 Variables, *R 43*
 variables, T 22
 vectors, row, T 36
 Vectors and Matrices, *T 36*
 Vectors as coefficients of polynomials, *R 220*

VectorSpace, R 599
VectorSpaceByPcgsOfElementaryAbelianGroup, R 450
 Vector Space Homomorphisms, *R 610*
 Vector Spaces, *T 59*
 Vector Spaces Handled By Nice Bases, *R 612*
 verbatim environments, E 22
 Version Numbers, *E 40*
vi, R 75
View, R 66
 View and Print, *R 66*
ViewObj, R 67
 for character tables, R 748
 for class functions, R 774
 for tables of marks, R 706
vim, R 75
VirtualCharacter, R 775
 virtual character, R 777
 virtual characters, R 768
W
 w_N , R 162
WeakPointerObj, E 51
WeakPointerObj, *E 51*
 Weak Pointer Objects, *E 51*
 web sites, for GAP, T 16
WedgeGModule, R 697
WeekDay, R 260
WeightLexOrdering, R 284
WeightOfGenerators, R 285
WeightsTom, R 712
WeightVecFFE, R 220
WeylGroup, R 649
WeylOrbitIterator, R 650
Where, R 70, T 86
While, *R 52*
 while loop, R 52
 whitespace, T 19
 Whitespaces, *R 41*
 Why Class Functions?, *R 768*
 Why Proceed in a Different Way?, *P 46*
WordAlp, R 255
 words, in generators, R 354

Working with large degree permutation groups, *R 428*
 Wrapping Up a GAP Package, *E 41*
WreathProduct, R 508
 wreath product embedding, R 509
WreathProductImprimitiveAction, R 509
WreathProductOrdering, R 286
WreathProductProductAction, R 509
 Wreath Products, *R 508*
WriteAll, R 101
WriteByte, R 101
WriteLine, R 101
 Writing Documentation, *E 36*
 Writing Functions, *T 40*
X
x, T 79
 x_N , R 162
Y
 y_N , R 162
Z
Z, R 584
ZClassRepsQClass, R 434
Zero, R 294
ZeroAttr, R 294
ZeroCoefficient, R 665
ZeroCoefficientRatFun, R 689
ZeroImmutable, R 294
ZeroMapping, R 306
ZeroMutable, R 294
ZeroOp, R 294
ZeroSameMutability, R 294
ZeroSM, R 294
ZippedProduct, R 691
ZippedSum, R 691
ZmodnZ, R 135
ZmodnZObj, R 135
ZmodpZ, R 135
ZmodpZNC, R 135
zoo, E 41
ZumbroichBase, R 595
Zuppos, R 377