

Extended Index

for Atiyah and MacDonald's "Introduction to Commutative Algebra"

Key:

- listings ending in "f" give the page where the term is defined

- "#A e #B" = page #A, exercise #B

| | | | |
|------------------------------|--------|------------------------------------|--------|
| a-adic topology | 105f | cokernel | 19f |
| a-filtration | 105f | colon operator | 8f |
| a-topology | 105f | comaximal ideals | 7f |
| a.c.c. | 74f | commutative diagram | 23f |
| absolutely flat ring | 35e27f | complete (group) | 105f |
| additive function | 23f | completion (of a ring) | 105f |
| affine algebraic variety | 15e27f | composition series | 76f |
| algebra | 30f | composition series (simple) | 76f |
| algebra (Boolean) | 14e24f | constructible (topological subset) | 87f |
| algebra (faithfully flat) | 46e16f | constructible subset | 87e21 |
| algebra (finite) | 30f | constructible topology | 48e27f |
| algebra (finitely generated) | 30f | content of a polynomial | 99e2f |
| annihilator (of a module) | 19f | contraction | 9f |
| annihilator ideal | 8f | coordinate functions | 15e27f |
| Artin ring | 89f | coordinate ring | 15e27f |
| Artin-Rees Lemma | 107f | coprime ideals | 7f |
| Artinian module | 74f | cyclic module | 35e26f |
| ascending chain condition | 74f | d.c.c. | 74f |
| associated prime ideals | 52f | decomposable ideal | 52f |
| basic open sets | 12e17f | Dedekind domain | 95f |
| bilinear mapping | 24f | depth (of a prime ideal) | 121f |
| Boolean algebra | 14e24f | descending chain condition | 74f |
| Boolean Lattice | 14e24f | dimension (local) | 124f |
| Boolean ring | 11e11f | dimension (of a ring) | 90f |
| boundary homomorphism | 23f | Dimension Theorem | 121f |
| Cauchy sequence | 102f | direct limit | 33e14f |
| chain | 4f | direct product (of modules) | 20f |
| chain (of modules) | 76f | direct product (of rings) | 7f |
| characteristic polynomial | 119f | direct sum (of modules) | 20f |
| class number (of a ring) | 98f | direct system | 33e14f |
| closed point | 13e18f | directed set | 32e19f |
| coherent (sequence) | 103f | discrete valuation | 94f |
| | | discrete valuation ring | 94f |
| | | distributive law (of ideals) | 6f |
| | | domain (Dedekind) | 95f |
| | | domain (principal ideal) | 5f |
| | | dominant local ring | 72e27f |
| | | element (homogeneous) | 106f |

| | | | |
|------------------------------------|-------------------|----------------------------------|------------|
| element (idempotent) | 11e2f | Hilbert's Nullstellensatz (weak) | 82f, 69e17 |
| element (integral) | 59f | homogeneous element | 106f |
| element (torsion) | 45e12f | homomorphism (finite type) | 30f |
| embedded prime ideals | 52f | homomorphism (finite) | 30f |
| equivalent (Cauchy sequences) | 102f | homomorphism (integral ring) | 60f |
| exact | 22f | homomorphism (module) | 18f |
| extension | 9f | homomorphism (of graded modules) | 106f |
| extension of scalars | 28f | homomorphism (restriction) | 47e23f |
| faithful module | 20f | homomorphism (ring) | 2f |
| faithfully flat algebra | 46e16f | ideal | 2f |
| fiber (of a ring homomorphism) | 47e21f | ideal (annihilator) | 8f |
| field | 3f | ideal (associated prime) | 52f |
| field of fractions | 36f | ideal (comaximal) | 7f |
| filtration | 105f | ideal (contraction) | 9f |
| finite algebra | 30f | ideal (coprime) | 7f |
| finite ring homomorphism | 30f | ideal (decomposable) | 52f |
| finite type (ring homomorphism of) | 30f | ideal (embedded prime) | 52f |
| finitely generated algebra | 30f | ideal (extension) | 9f |
| finitely generated module | 20f | ideal (intersection of) | 6f |
| finitely generated ring | 30f | ideal (irreducible) | 82f |
| flat module | 29f | ideal (isolated prime) | 52f |
| fractional ideal | 96f | ideal (Jacobson radical) | 5f |
| free module | 21f | ideal (maximal) | 3f |
| Gauss's Lemma | 99e2f | ideal (minimal prime) | 52f |
| going-down property | 68e10f | ideal (nilradical) | 5f |
| Going-down Theorem | 64f | ideal (p-primary) | 51f |
| going-up property | 68e10f | ideal (primary) | 50f |
| Going-up Theorem | 62f | ideal (prime) | 3f |
| graded module homomorphism | 106f | ideal (principal) | 3f |
| graded ring | 106f | ideal (product of) | 6f |
| Grothendieck group | 88e26f | ideal (radical) | 8f |
| group (complete) | 105f | ideal (sum of) | 6f |
| group of ideals | 98f | ideal (union of) | 7f |
| height (of a prime ideal) | 120f | ideal class group | 98f |
| Hensel's Lemma | 115e9f | ideal of the variety | 15e27f |
| Hilbert function | 118f | ideal quotient | 8f |
| Hilbert's Basis Theorem | 81f | idempotent element | 11e2f |
| Hilbert's Nullstellensatz (strong) | 85f, 70e18, 85e14 | image | 2f, 18 |

| | | | |
|---|--------|---|--------|
| integral (over a ring) | 60f | minimal prime ideals | 52f |
| integral (over an ideal) | 63f | modular law (of ideals) | 6f |
| integral algebra | 60f | module | 17f |
| integral closure (in a ring) | 60f | module (annihilator of) | 19f |
| integral closure (in an ideal) | 63f | module (Artinian) | 74f |
| integral domain | 2f | module (chain of) | 76f |
| integral element | 59f | module (composition series) | 76f |
| integral ideal | 96f | module (cyclic) | 35e26f |
| integral ring homomorphism | 60f | module (direct product of) | 20f |
| integrally closed (in a ring) | 60f | module (direct sum of) | 20f |
| integrally closed ring | 62f | module (faithful) | 20f |
| intersection of ideals | 6f | module (finitely generated) | 20f |
| inverse limit | 103f | module (flat) | 29f |
| inverse system | 103f | module (fractional ideal) | 96f |
| invertible ideal | 96f | module (free) | 21f |
| irreducible (topological space) | 13e19f | module (integral ideal) | 96f |
| irreducible components | 13e20f | module (invertible ideal) | 96f |
| irreducible ideal | 82f | module (minimal primary decomposition of a) | 58e22f |
| irredundant primary decomposition | 52f | module (Noetherian) | 74f |
| isolated prime ideals | 52f | module (primary decomposition of a) | 58e22f |
| isolated set of prime ideals | 54f | module (primary) | 58e21f |
| Jacobson radical ideal | 5f | module (product of) | 19f |
| Jacobson ring | 71e23f | module (radical of) | 57e20f |
| kernel | 2f, 18 | module (sum of) | 19f |
| Krull's Principal Ideal Theorem | 122f | module (support of a) | 46e19f |
| Krull's Theorem | 109f | module (torsion) | 45e12f |
| length (of chain) | 76f | module homomorphism | 18f |
| local dimension | 124f | module of finite length | 77f |
| local property | 40f | multiplicatively closed subset | 36f |
| local ring | 4f | Nakayama's Lemma | 21f |
| localization | 38f | nilpotent element | 2f |
| locally closed subset | 71e26f | nilpotent element (in a module) | 57e21f |
| maximal condition | 74f | nilradical ideal | 5f |
| maximal ideal | 3f | Noether's Normalization Lemma | 69e16f |
| maximal spectrum | 14e26f | Noetherian module | 74f |
| minimal condition | 74f | Noetherian ring | 80f |
| minimal primary decomposition | 52f | Noetherian topological space | 79e5f |
| minimal primary decomposition (of a module) | 58e22f | non-singular point (on a variety) | 125e1f |

| | | | |
|-------------------------------------|--------|-------------------------------------|-------------|
| normal primary decomposition | 52f | ring (discrete valuation) | 94f |
| p-adic integers | 105f | ring (finitely generated) | 30f |
| P-primary ideal | 51f | ring (graded) | 106f |
| Poincare Series | 116f | ring (integrally closed) | 62f |
| polynomial (primitive) | 11e6f | ring (Jacobson) | 71e23f |
| presheaf of rings | 47e23f | ring (local dominant) | 72e27f |
| primary decomposition | 51f | ring (local) | 4f |
| primary decomposition (irredundant) | 52f | ring (Noetherian) | 80f |
| primary decomposition (minimal) | 52f | ring (regular local) | 123f |
| primary decomposition (normal) | 52f | ring (semi-local) | 4f |
| primary decomposition (reduced) | 52f | ring (topological) | 105f |
| primary decomposition of a module | 58e22f | ring (valuation) | 65f, 94 |
| primary ideal | 50f | ring (Zariski) | 114e6f |
| primary module | 58e21f | ring homomorphism | 2f |
| prime ideal | 3f | saturation | 44e7f, 56e1 |
| prime spectrum | 12e15f | semi-local ring | 4f |
| primitive polynomial | 11e6f | short exact sequence | 22f |
| principal ideal | 3f | simple | 76f |
| principal ideal domain | 5f | stable (a-filtration) | 105f |
| product (of modules) | 19f | submodule | 18f |
| product of ideals | 6f | subring | 2f |
| quasi-compact (topological space) | 12e17f | sum (of modules) | 19f |
| quotient module | 18f | sum of ideals | 6f |
| quotient ring | 2f | support (of a module) | 46e19f |
| radical (of a module) | 57e20f | symbolic power (of p) | 56e13f |
| radical ideal | 8f | system of parameters | 122f |
| reduced primary decomposition | 52f | tensor product | 24f |
| regular local ring | 123f | topological ring | 105f |
| residue field | 4f, 43 | topological space (irreducible) | 13e19f |
| residue-class ring | 2f | topological space (Noetherian) | 79e5f |
| restriction homomorphism | 47e23f | topological space (quasi-compact) | 12e17f |
| restriction of scalars | 27f | topological subset (constructible) | 87e21 |
| ring | 1f | topological subset (locally closed) | 71e26f |
| ring (absolutely flat) | 35e27f | topological subset (very dense) | 71e26f |
| ring (Artin) | 89f | topology (constructible) | 48e27f |
| ring (Boolean) | 11e11f | torsion element | 45e12f |
| ring (coordinate) | 15e27f | torsion submodule | 45e12f |
| ring (direct product) | 7f | total ring of fractions | 44e9f |

| | |
|----------------------------|---------|
| union of ideals | 7f |
| unit | 2f |
| valuation ring | 65f, 94 |
| value group | 72e31f |
| very dense subset | 71e26f |
| Zariski ring | 114e6f |
| Zariski topology | 12e15f |
| zero-divisor | 2f |
| zero-divisor (in a module) | 57e21f |
| Zorn's Lemma | 3f |

Compiled by Kyle Kloster.

If you have comments or corrections,

please emailed me at kkloste@math.purdue.edu

