

# Index

- absolute value, 5, 31, 53, 119, 156
- acceleration, 119, 168, 179, 207, 226
  - centripetal, *see* radial accel.
- algorithm, 272, 291, 295
- amplitude, 223, 225, 227, 230
- angular
  - acceleration, 214
  - force, *see* torque
  - kinetic energy, 215, 218
  - momentum, 215, 218
  - motion, 213
  - velocity, 214
- angular frequency, 226, 229
- annual percentage rate, 94
- antiderivative, 303, 305, 311, 318
- APR, *see* annual percentage rate
- arc length, 81, 348
- area, 8, 77, 81, 125, 254, 313, 349
- associative, 7, 21
- asymptote, 269
- axis, 40, 82, 150, 156, 170, 349
  
- basis, 142, 150, 170, 179, 182, 206
- bijective, 44
  
- Cartesian plane, 40, 43, 145
- chain rule, 231, 281, 284
- circle, 79, 89, 206, 297, 346, 436
- codomain, 43
- collect, 175, 425
- commutative, 7, 21, 141, 153, 441
- completing the square, 23, 26, 426
- complex number, 7, 98, 154, 430
- conservation of
  - angular momentum, 218, 220
  - energy, 166, 198, 201
  - momentum, 166, 193
- conservative force, 200, 256, 345
- convergence, 258, 259, 266, 271, 356,  
360, 361, 364, 436, 437
- coordinate system, *see* basis
- cosine, 14, 57, 70, 78, 224, 363, 429
- critical point, 253, 295, 434
- cross product, 143, 153, 440
- cylinder, 78
- cylindrical shell method, 351, 383
  
- De Moivre's formula, 159
- derivative, 125, 251, 276, 279, 433
- differentiable, 284, 292, 296
- disk method, 350
- distributive, 21
- divergence, 360, 361, 437
- domain, 43, 103
- dot product, 143, 152, 198, 440
  
- eccentricity, 83, 89
- ellipse, 82, 89
- energy, 197
  - conservation, 166, 198, 201
  - kinetic, *see* kinetic energy
  - potential, 200, 256, 346, 444
- Euler's
  - formula, 159, 368, 431
  - number, 29, 33, 273, 427
- expand, 21, 26, 425, 428
- exponent, 8, 29, 34, 423
- exponential, 14, 29, 59, 95, 272, 427
- extremum, 292
  
- factor, 8, 21
- factoring, 21, 28, 425, 428
- Fibonacci sequence, 356
- force, 165, 176, 179, 441, 444

- friction, *178*
- gravitational, *133, 169, 177, 180, 201, 346*
- normal, *178, 180*
- radial, *207, 213*
- spring, *177, 180, 201, 231, 346*
- tension, *179, 180*
- fraction, *7, 17, 423, 427*
  - improper, *20*
- frequency, *209, 223, 225*
- friction
  - kinetic, *see kinetic friction*
  - static, *see static friction*
- friction force, *178*
- FTC, *see fundamental theorem of calculus*
- function, *43, 49*
  - even, *54, 88, 364*
  - odd, *54, 88*
- fundamental theorem of calculus, *305, 310, 318, 387, 435*
- GCD, *19*
- golden ratio, *27, 356*
- gravitational force, *133, 169, 177, 180, 201, 346*
- gravitational potential energy, *198, 201, 230, 345, 346, 444*
- Hertz (unit), *209, 418*
- hyperbola, *86, 89*
- image, *43, 104*
- implicit differentiation, *297*
- improper integral, *354, 361*
- incline, *180, 185, 188, 203, 205*
- infinity, *36, 257, 260, 266, 316, 431*
- injective, *44*
- integral, *125, 254, 279, 302, 316, 318, 343, 361, 434*
- interest rate, *94, 273, 369, 432*
- interval, *37, 39, 261, 292*
- isolate, *5, 13, 26, 90*
- kinematics, *118, 129, 164, 191, 215, 343, 442*
- kinetic energy, *197, 199, 227*
  - rotational, *215, 218*
- kinetic friction, *179, 180*
- L'Hopital's rule, *274*
- LCM, *19*
- length, *7, 70, 144, 156, 439*
- limit, *95, 257, 265, 270, 432*
- linearity, *54, 280, 286, 310, 389*
- logarithm, *14, 33, 60, 272, 427*
- Maclaurin series, *364, 438*
- maximum, *117, 252, 292, 296, 434*
- minimum, *252, 289, 292, 296, 434*
- moment of inertia, *214, 217, 256, 347, 353*
- momentum, *166, 192*
  - conservation, *166, 193*
- Newton (unit), *176, 418*
- Newton's laws, *164, 177, 218*
- nonnegative, *44, 52, 53, 97, 104, 119*
- normal force, *178, 180*
- one-to-one, *see injective*
- one-to-one corresp., *see bijective*
- onto, *see surjective*
- optimization, *252, 277, 289, 291, 434*
- parametric equation, *80*
- pendulum, *229, 233*
- period, *209, 223, 226, 229*
- polar coordinates, *80, 89, 155, 346*
- polynomial, *54, 66, 158, 362, 428*
- potential energy, *200, 256, 346, 444*
- power rule, *132, 277, 306*
- power series, *see Taylor series*
- precision, *31, 262, 301, 424*
- product rule, *281, 283, 342*
- projectile motion, *167*
- quadratic, *14, 23, 25, 41, 51, 68, 154*
- quotient rule, *281*
- radial acceleration, *207, 212*
- radian, *70, 74, 81, 429*
- range, *see image*
- Riemann sum, *271, 312, 316*
- saddle point, *292, 296*
- scientific notation, *see precision*
- sequence, *257, 354, 436*
  - alternating, *361, 381*

- arithmetic, 355, 359
- Fibonacci, 356
- geometric, 355, 358
- harmonic, 355, 437
- series, 258, 357, 437
- set, 6, 17, 43, 96, 155, 250, 311, 414
  - difference, 96, 414
  - intersection, 96, 414
  - subset, 6, 37, 96, 414
  - union, 37, 96, 414
- SHM, *see* simple harmonic motion
- simple harmonic motion, 223, 444
- sine, 14, 55, 70, 77, 330, 363, 429
- speed, 119, 212
- sphere, 78, 217, 350
- spring constant, 178, 182, 198, 226
- spring force, 177, 180, 201, 231, 346
- spring potential energy, 198, 201, 227, 346, 444
- static equilibrium, 183, 221
- static friction, 179, 180
- substitution, 12, 68, 91, 325, 425
- summation, 66, 258, 314, 357, 437
- surface of revolution, 349, 383
- surjective, 44
  
- tangent, 58, 70, 212, 332
- tangent line, 253, 260, 278, 365, 433
- Taylor series, 234, 259, 288, 362, 437
- tension, 179, 180
- term, 21, 54, 67, 307, 357
- torque, 215, 216, 218, 221
- trigonometric identities, 75, 228, 233, 323, 327, 328, 429
  
- UAM, *see* uniformly accel. motion
- uniform velocity motion, 122, 169, 216
- uniformly accelerated motion, 121, 130, 169, 215, 443
- unit circle, 71
- unit vector, 146, 180, 439
- UVM, *see* uniform velocity motion
  
- vector, 40, 139, 168, 179, 192, 439
- velocity, 119, 168, 207, 226
- volume, 78, 350
- volume of revolution, 350, 383
- washer method, 351
- work, 198, 199, 344, 444