

Index

- u -substitution, 292
- absolute convergence, 492
- acceleration, 59
- alternating series, 488
- alternating series estimation theorem, 491
- alternating series test, 490
- antiderivative, 213
 - general, 256, 270
 - graph, 267
- antidifferentiation, 212
- arc length, 339, 340
- arcsine, 133
- area, 334
 - under velocity function, 209
- asymptote, 155
 - horizontal, 155
 - vertical, 155
- autonomous, 394
- average rate of change, 23
- average value of a function, 243
- average velocity, 2
- backward difference, 46
- carrying capacity, 439
- central difference, 46
- chain rule, 122
- codomain, 130
- composition, 120
- concave down, 58
- concave up, 58
- concavity, 58
- conditional convergence, 492
- constant multiple rule, 91
- continuous, 69
- continuous at $x = a$, 70
- converge
 - sequence, 451
- convergence
 - absolute, 492
 - conditional, 492
- convergent sequence, 451
- cosecant, 114
- cotangent, 114
- critical number, 164
- critical point, 164
- critical value, 164
- cusp, 72
- decreasing, 53
- definite integral
 - constant multiple rule, 242
 - definition, 236
 - sum rule, 243
- density, 355
- derivative, 24
 - arcsine, 135
 - constant function, 89
 - cosine, 99
 - cotangent, 115
 - definition, 24, 36
 - exponential function, 90
 - logarithm, 132
 - power function, 89
 - sine, 99
 - tangent, 115
- difference quotient, 45
- differentiable, 24, 71
- differential equation, 388
 - autonomous, 394

- first order, 394
- solution, 392
- disk method, 346
- distance traveled, 212
- diverge
 - sequence, 451
- Divergence Test, 474
- domain, 130

- equilibrium solution, 404
 - stable, 404
 - unstable, 405
- error, 323
- error function, 281
- error function, 316
- Euler's Method, 410
 - error, 415
- extreme value, 162
- extreme value theorem, 184

- Fibonacci sequence, 447
- first derivative test, 164
- foot-pound, 366
- forward difference, 46
- FTC, 254
- function, 130
- function-derivative pair, 292
- Fundamental Theorem of Calculus
 - First, 276
 - Second, 278
- fundamental theorem of calculus, 252

- geometric series, 458
 - common ratio, 459
- geometric sum, 457

- harmonic series, 474
- Hooke's Law, 368

- implicit function, 142
- improper integral, 378
 - converges, 380
 - diverges, 380
 - unbounded integrand, 381
 - unbounded region of integration, 379
- increasing, 53
- indefinite integral, 291
 - evaluate, 291
- indeterminate, 15
- infinite series, 470
- infinity, 154
- inflection point, 169
- initial condition, 270
- instantaneous rate of change, 24, 44
- instantaneous velocity, 4, 17
- integral function, 271
- integral sign, 237
- integral test, 474, 477
- integrand, 237
- integration by parts, 301
- interval of convergence, 508

- L'Hopital's rule, 151, 157
- Lagrange error bound, 513
- left limit, 66
- lemniscate, 141
- limit
 - definition, 13
 - one-sided, 66
- limit comparison test, 478
- limits of integration, 237
- local linearization, 79
- locally linear, 72
- logistic, 439
- logistic equation, 439
 - solution, 442

- Maclaurin series, 507
- mass, 355
- maximum
 - absolute, 162
 - global, 162
 - local, 162
 - relative, 162
- midpoint rule
 - error, 323
- minimum

- absolute, 162
- global, 162
- local, 162
- relative, 162
- net signed area, 229
- Newton's Law of Cooling, 395
- Newton-meter, 366
- one-to-one, 130
- onto, 130
- partial fractions, 311
- partial sum, 460, 471
- per capita growth rate, 438
- position, 2
- power series, 520
- product rule, 105
- quotient rule, 106
- ratio test, 480
- related rates, 198
- Riemann sum, 225
 - left, 225
 - middle, 227
 - right, 227
- right limit, 66
- secant, 114
- secant line, 25
- second derivative, 55, 56
- second derivative test, 167
- separable, 419, 420
- sequence, 449
 - term, 450
- sequence of partial sums, 471
- series, 470
 - converges, 472
 - diverges, 472
 - geometric, 458
- sigma notation, 223
- Simpson's rule, 326
- slope field, 399, 401
- solid of revolution, 345
- stable, 404
- sum rule, 91
- tangent, 114
- tangent line, 25
 - equation, 78
 - slope, 26
- Taylor polynomial
 - error, 511
- Taylor polynomials, 503
- Taylor series, 506, 507
 - interval of convergence, 508
 - radius of convergence, 511
- total change theorem, 257, 258
- trapezoid rule, 321
 - error, 323
- triangular numbers, 447
- trigonometry, 113
 - fundamental trigonometric identity, 113
- unstable, 405
- washer method, 348
- weighted average, 326, 359
- work, 366, 367