Index

A
absolute extremum, 101
algebraic precedence, 325
alternating harmonic series, 283
antiderivative; 137
arc length, 242
arcsec; 195
arccsc; 194
area
between curves, 153
under curve, 131
asymptote, 21, 98
B
bell curve, 236
bounded function, 51

C
Cartesian coordinates, 251
Cauchy Principal Value, 230
cos, 326
continuus, 53
curve sketching, 89
cylinder
lateral area, 326
surface area, 326
cosines
law of, 326
critical point, 90
critical value, 90
cumulative distribution function, 236
curve sketching, 89
cycloid, 261
curvature
lateral area, 326
surface area, 326
volume, 326
D
definite integral, 141
dependent variable, 22
derivative, 32, 46
dot notation, 114
Leibniz notation, 47
second, 95, 96
difference quotient, 30
differential, 126
discrete probability, 233
divergence test, 270
divergent sequence, 269
divergent series, 274
domain, 21
dot notation, 114

E
equation of a line, 326
equation of, 326
ellipse
area, 325
equation of, 326
ellipsoid
area, 325
surface area, 326
volume, 326
enclosed area
ellipse, 325
ellipse, 325
equation of, 326

F
equation of, 326
equation of, 326

G
geometric series, 274
geometric, 274
harmonic, 277
harmonic series, 277
hyperbolic cosine, 197
hyperbolic sine, 197
hypocycloid, 262
hyperbolic cosine, 197
hyperbolic sine, 197
hypocycloid, 262
I
implicit differentiation, 80
implicit function, 86
improper integral, 229
convergent, 229
diverges, 229
indefinite integral, 141
independent variable, 22
inflection point, 97
integral
improper, 229
absolute, 230

K
kinetic energy, 231

L
L'Hôpital's Rule, 86
law of sines, 326
law of cosines, 326
Leibniz notation, 47
limit of a sequence, 269
limit, 39
limit at infinity, 85
limit of a sequence, 269
linear approximation, 125
linearity of the derivative, 58
local extremum, 89
local maximum, 89
local minimum, 89
long division of polynomials, 214

M
Maclaurin series, 298
mean, 234, 237
Mean Value Theorem, 128
moment, 225
N
Napier's constant, 186
Newton, 172
Newton's method, 121–123
normal distribution, 242
O
one-sided limit, 44
optimization, 101
P
p-series, 280
parametric equations, 260
partial fractions, 212
polynomials, 214
power function, 55
power rule, 55
pre-existence
of algebraic operations, 325
probability density function, 235
product rule, 60, 61
generalized, 62
properties of integrals, 145
Q
quadratic formula, 325
quotient rule, 62
R
radical measure, 71
radius of convergence, 294
random variable, 234
rational function, 64, 212
rectangular coordinates, 251
related rates, 113
Rolle's Theorem, 128
S
second derivative, 95, 96
sequence, 268
bounded, 272
bounded above, 272
bounded below, 272
convergent, 269
decreasing, 272
divergent, 269
increasing, 272
monotone, 272
non-decreasing, 272
non-increasing, 272
of partial sums, 274
series, 268
power series, 280
absolute convergence, 288
alternating harmonic, 283
conditional convergence, 288
divergent, 274
geometric, 274
harmonic, 277
integral test, 280
interval of convergence, 294
Maclaurin, 298
radius of convergence, 294
Taylor, 800
Taylor series, 219
sine
law of, 326
sphere
surface area, 326
volume, 326
spiral of Archimedes, 253
square theorem, 75
standard deviation, 239
standard normal distribution, 237
standard normal probability density function, 236
subtend, 72
sum rule, 59
T
tangent line, 30
taylor series, 300
Torricelli's trumpet, 233, 248
torus, 223
torsion, 248
transcendental function, 71
transcendental number, 186
Trapp's Rule, 217
triangle inequality, 41
trigonometric identities, 326