MATH NOTATION CHEAT SHEET

ARITHMETIC

$a+b$ ADDITION $a-b$ SUBTRACTION

$a \times b$ $a^{*}b$ $a \cdot b$ VARIOUS FORMS OF MULTIPLICATION

$a:b$ a/b $a \div b$ $\frac{a}{b}$ VARIOUS FORMS OF DIVISION

$5 \bmod 2 = 1$ (mod: REMAINDER) $-a$ NEGATIVE

$\pm a$ PLUS OR MINUS $\mp a$ MINUS OR PLUS 2.14 DECIMAL POINT

a^2 SQUARED a^3 CUBED a^n n-TH POWER

$\sqrt{a}$ SQUARE ROOT $\sqrt[3]{a}$ CUBE ROOT $\sqrt[n]{a}$ n-TH ROOT

EQUALITY SYMBOLS

$3=1+2$ EQUALS $3 \neq 4$ NOT EQUALS $a \equiv b$ IDENTICAL

$a \propto b$ PROPORTIONAL TO $\sin(0.01) \approx 0.01$ APPROXIMATELY EQUAL TO

COMPARISON

$a<b$ a LESS THAN b $a>b$ a GREATER THAN b

$a \leq b$ a LESS THAN OR EQUAL TO b $a \geq b$ a GREATER THAN OR EQUAL TO b

$a \ll b$ a MUCH SMALLER THAN b $a \gg b$ a MUCH LARGER THAN b

ANGLES

DEGREES, ARC MIN, ARC SEC: $30°45'20''$

$\pi = 3.14159...$ PI $360° = 2\pi \text{ rad}$ RADIANS

ALGEBRA SYMBOLS

$5! = 5 \times 4 \times 3 \times 2 \times 1$ FACTORIAL

$|-5| = 5$ ABSOLUTE VALUE $f(x) = 2x^2$ FUNCTION OF x

DELTA $\Delta x = x_1 - x_0$ CHANGE OR DIFFERENCE

SUM (END 5, START $i=2$): $\sum_{i=2}^{5} i^2 = 2^2+3^2+4^2+5^2 = 54$

$e = 2.71828...$ EULER'S CONSTANT

SERIES PRODUCT: $\prod_{x=2}^{4} x^2 = 2^2 \times 3^2 \times 4^2 = 576$

BRACKETS

$y = \left[(2x-1)(x+3)\right]^2$

PARENTHESES; RESOLVE INNER BRACKETS FIRST

PROBABILITY AND STATISTICS

$P(A)$ PROBABILITY OF EVENT A $P(A \cap B)$ INTERSECTION PROB. OF A AND B $P(A \cup B)$ UNION PROB. OF A OR B $P(A|B)$ CONDITIONAL PROB. OF A GIVEN B

$\tilde{x}$ MEDIAN μ, $\bar{x}$, $\langle X \rangle$ POPULATION MEAN σ STANDARD DEVIATION σ^2 VARIENCE

LINEAR ALGEBRA

VECTORS

v, $\bar{v}$, $\vec{v}$

$v = (1,2,3)$ ROW VECTOR $w = \begin{pmatrix} 4 \\ 5 \\ 6 \end{pmatrix}$ COLUMN VECTOR

$v \cdot w$ (v,w) $\langle v|w \rangle$ DOT PRODUCT $v \times w$ CROSS PRODUCT

$|v|$ LENGTH OF V $\|v\|$ NORM OF V

MATRICES

$A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix}$ 2 BY 3 MATRIX

$A \cdot B$ PRODUCT $A \circ B$ HADAMARD PRODUCT $A \otimes B$ KRONECKER PRODUCT

A^T TANSPOSED MATRIX $A^\dagger$, A^* HERMITIAN MATRIX OR CONJUGATE TRANSPOSE

A^{-1} INVERSE MATRIX $|A|$ DETERMINANT $\|A\|$ NORM

GREEK ALPHABET

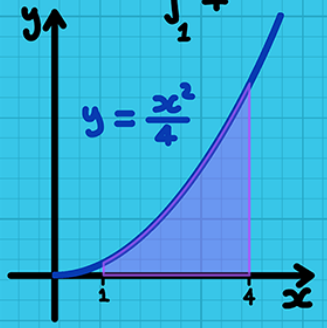
Aα ALPHA	Bβ BETA	Γγ GAMMA	Δδ DELTA	Eε EPSILON	Zζ ZETA
Hη ETA	Θθ THETA	Iι IOTA	Kκ KAPPA	Λλ LAMBDA	Mμ MU
Nν NU	Ξξ KSI	Oo OMICRON	Ππ PI	Pρ RHO	Σσς SIGMA
Tτ TAU	Yυ UPSILON	Φφ PHI	Χχ CHI	Ψψ PSI	Ωω OMEGA

CALCULUS

INTEGRATION

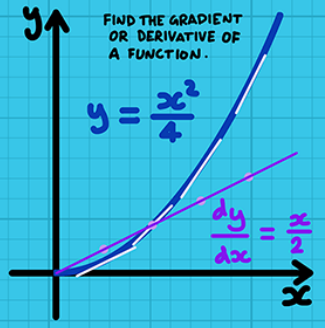
FIND THE AREA UNDER A FUNCTION BETWEEN LIMITS. OR FIND THE ANTIDERIVATIVE FUNCTION.

$A = \int_1^4 \frac{x^2}{4}\,dx$



DIFFERENTIATION

FIND THE GRADIENT OR DERIVATIVE OF A FUNCTION.



$\frac{df}{dx}$ FIRST DERIVATIVE WITH RESPECT TO x

f', f'' FIRST AND SECOND DERIVATIVE OF FUNCTION

$\dot{f}$, $\ddot{f}$ FIRST AND SECOND DERIVATIVE WITH RESPECT TO TIME

$\frac{\partial f}{\partial x}$ PARTIAL DERIVATIVE WITH RESPECT TO x

COMPLEX NUMBERS

$z = 3+2i$

WHERE $i \equiv \sqrt{-1}$

$\Re(z) = 3$ REAL PART OF COMPLEX NUM

$\Im(z) = 2$ IMAGINARY PART OF COMPLEX NUM

$\bar{z} \equiv z^* = 3-2i$ COMPLEX CONJUGATE

YOUTUBE / DOMAIN OF SCIENCE / HOW TO READ MATH