Mathematics 20-1 Formula Sheet

Arithmetic Sequences and Series

$t_n = t_1 + (n-1)d$ or $t_n = a + (n-1)d$

$S_n = \dfrac{n}{2}[2t_1 + (n-1)d]$ or $S_n = \dfrac{n}{2}[2a + (n-1)d]$

$S_n = \dfrac{n}{2}(t_1 + t_n)$ or $S_n = \dfrac{n}{2}(a + t_n)$

Geometric Sequences and Series

$t_n = t_1 r^{n-1}$ or $t_n = ar^{n-1}$

$S_n = \dfrac{t_1(r^n - 1)}{r - 1}, r \neq 1$ or $S_n = \dfrac{a(r^n - 1)}{r - 1}, r \neq 1$

$S_n = \dfrac{rt_n - t_1}{r - 1}, r \neq 1$ or $S_n = \dfrac{rt_n - a}{r - 1}, r \neq 1$

$s = \dfrac{t_1}{1 - r}, -1 < r < 1$ or $s = \dfrac{a}{1 - r}, -1 < r < 1$

Trigonometry

$\sin q = \dfrac{opp}{hyp} = \dfrac{y}{r}$ $\cos q = \dfrac{adj}{hyp} = \dfrac{x}{r}$ $\tan q = \dfrac{opp}{adj} = \dfrac{y}{x}$

$\dfrac{a}{\sin A} = \dfrac{b}{\sin B} = \dfrac{c}{\sin C}$ $a^2 = b^2 + c^2 - 2bc \cos A$ $\cos A = \dfrac{b^2 + c^2 - a^2}{2bc}$

Linear Relations

$y = mx + b$ $y - y_1 = m(x - x_1)$ $Ax + By + C = 0$

$m = \dfrac{y_2 - y_1}{x_2 - x_1}$ $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Quadratic Functions and Equations

$y = ax^2 + bx + c$ $y = a(x - p)^2 + q$ $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Graphing Calculator

$x : [x_{min}, x_{max}, x_{scl}]$ $y : [y_{min}, y_{max}, y_{scl}]$