

Algebra 2 Formulas

Pythagorean Theorem

$$a^2 + b^2 = c^2$$

Slope

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Distance Formula

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

Point-Slope Form

$$y - y_1 = m(x - x_1)$$

Midpoint Formula

$$(x_m, y_m) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

Slope-Intercept Form

$$y = mx + b$$

Quadratic Formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Parabola

Axis of Symmetry is $x = \frac{-b}{2a}$

Difference of Squares

$$a^2 - b^2 = (a + b)(a - b)$$

Direct Variation

$$\frac{y_1}{x_1} = \frac{y_2}{x_2} \quad y = kx$$

Factoring Perfect Square Trinomial

$$a^2 + 2ab + b^2 = (a + b)(a + b) = (a + b)^2$$

$$a^2 - 2ab + b^2 = (a - b)(a - b) = (a - b)^2$$

Sum and Difference of Cubes

$$a^3 + b^3 = (a + b)(a^2 - ab + b^2)$$

$$a^3 - b^3 = (a - b)(a^2 + ab + b^2)$$

Change of Base

$$\log_b M = \frac{\log M}{\log b}$$

Continuously Compound Interest formula

$$A = Pe^{rt}$$

Logarithm

If $y = b^x$, then $\log_b y = x$

Natural Logarithmic Function

If $y = e^x$, then $\log_e y = x$, which is commonly written as $\ln y = x$