

Factoring

Perfect Square Trinomials

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

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

Difference of Squares

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

Difference of Cubes

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

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

Linear Formulas

Slope

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

Slope – intercept form

$$y = mx + b$$

Point – slope form

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

Standard form

$$Ax + By = C$$

Quadratic Formulas

Standard Form

$$f(x) = ax^2 + bx + c$$

Vertex Form

$$f(x) = a(x - h)^2 + k$$

Quadratic formula

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

Vertex formula

$$\left(-\frac{b}{2a}, f\left(-\frac{b}{2a}\right)\right)$$

Other Equations

Circle

$$(x - h)^2 + (y - k)^2 = r^2$$

Distance

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

Midpoint

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

Interest FormulasCompound Interest *n* times per year

$$A = P \left(1 + \frac{r}{n}\right)^{nt}$$

Continuously Compounded

$$A = Pe^{rt}$$

Exponents and Logarithms

Rational Exponent

$$\sqrt[n]{b^m} = b^{\frac{m}{n}}$$

Negative exponent

$$b^{-x} = \frac{1}{b^x}$$

Product property

$$\log_b MN = \log_b M + \log_b N$$

Quotient property

$$\log_b \frac{M}{N} = \log_b M - \log_b N$$

Power property

$$\log_b M^p = p \log_b M$$

Change of base

$$\log_b x = \frac{\log x}{\log b} = \frac{\ln x}{\ln b}$$