

Math 013 Formula Sheet

$$\text{Slope: } m = \frac{\text{change in } y}{\text{change in } x} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$\text{Slope-Intercept Equation of a Line: } y = mx + b$$

$$\text{Point-Slope Equation of a Line: } y - y_1 = m(x - x_1)$$

Parallel slope: equal

$$\text{Perpendicular slope: } m_{\perp} = \frac{-1}{m}$$

$$\text{Horizontal Line: } y = b$$

$$\text{Vertical Line: } x = a$$

Perfect Square Trinomials:

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

Difference of Two Squares:

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

Sum of Two Cubes:

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

Difference of Two Cubes:

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

Exponent Rules:

1. $a^m a^n = a^{m+n}$
2. $\frac{a^m}{a^n} = a^{m-n}$
3. $(a^m)^n = a^{mn}$
4. $(ab)^n = a^n b^n$
5. $\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$

Things to know:

Order of operations.

Evaluate an equation.

Solve linear equations (including infinitely many solutions and no solution).

Solve linear inequalities (parentheses if < or >; brackets if ≤ or ≥).

Solve an equation with 2 variables for one of the variables.

Story problems involving linear equations.

Graph linear equations.

Find slope between 2 points.

Find x- and y-intercepts.

Determine whether lines are parallel, perpendicular, or neither.

Find the equation of a line given 2 points.

Solve a system of linear equations in 2 variables (substitution or elimination; including infinitely many solutions and no solution).

Simplify using exponent properties.

Adding, subtracting, multiplying, and dividing polynomials.

Factor.

Solve quadratic equations by factoring.

Story problems involving quadratic equations.