

# Algebra 1 Cheat Sheet - November 12, 2012

Point-slope formula:  $y - y_1 = m(x - x_1)$ , where there is a point  $(x_1, y_1)$  and a slope  $m$

Slope-intercept:  $y = mx + b$ , where  $m$  is the slope and  $b$  is the y-intercept

Standard Form:  $Ax + By = C$ , where  $A$  is non-negative and  $A/B$  are both non-zero.

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

Exponent Rules: (You can do these forward and backwards):

$$a^b \cdot a^c = a^{b+c} \quad (1)$$

$$\frac{a^b}{a^c} = a^{b-c} \quad (2)$$

$$(a^b)^c = a^{b \cdot c} \quad (3)$$

$$a^b \cdot c^b = (a \cdot c)^b \quad (4)$$

$$a^{-b} = \frac{1}{a^b} \quad (5)$$

$$\sqrt[n]{a^b} = a^{b/n} \quad (6)$$

$$\sqrt{a} = a^{1/2} \quad (7)$$

$$a^0 = 1 \quad (8)$$

$$a^1 = a \quad (9)$$

$$\left(\frac{a}{b}\right)^c = \frac{a^c}{b^c} \quad (10)$$

Identities:

$$a + 0 = a \quad (1)$$

$$a \cdot \frac{1}{a} = \frac{a}{a} = 1 \quad (2)$$

Distributive and commutative prop:

$$a(b + c) = ab + ac \quad (1)$$

$$(a + b) + c = a + (b + c) \quad (2)$$

$$(a \cdot b) \cdot c = (b \cdot c) \cdot a \quad (3)$$

The Quadratic Formula:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}, \text{ in the form of } Ax^2 + Bx + C = 0$$

How to factor in the form of  $Ax^2 + Bx + C = 0$

If  $A$  is 1, then find 2 numbers that add up to  $B$ , and also multiply to  $C$ . Write them in parenthesis, then change sign. Look at notes for a more proper explanation. Else if  $A$  is not 1, then multiply  $A$  to  $C$  and then factor, then divide the numbers in parenthesis by  $A$ . Then change sign. Check if it multiplies correctly.

Fractions:

$$\text{Add: } \frac{a}{b} + \frac{c}{d} = \frac{ad + bc}{bd} \quad (1)$$

$$\text{Subtract: } \frac{a}{b} - \frac{c}{d} = \frac{ad - bc}{bd} \quad (2)$$

$$\text{Multiply: } \frac{a}{b} \times \frac{c}{d} = \frac{ac}{bd} \quad (3)$$

$$\text{Divide: } \frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \times \frac{d}{c} = \frac{ad}{bc} \quad (4)$$