College Algebra Formulas Tests – Use This to Study

Positive	Zero	Negative
3x + 5 = 4	3x + 5 = 0	3x + 5 = -4
becomes	becomes	has
3x + 5 = 4 or 3x + 5 = -4 (drop) (drop/sign flip)	3x + 5 = 0	No Solution

For inequalities involving absolute value:

...**positive**, rewrite as a compound or combined inequality without absolute value bars (see examples below)

>	3x + 5 > 4	$ 3x+5 \ge 7$	
or	becomes	becomes	
\geq	3x + 5 > 4 or $3x + 5 < -4$	$3x + 5 \ge 7 \text{ or } 3x + 5 \le -7$	
	(drop) (drop/double sign flip)	(drop) (drop/double sign flip)	
<	3x + 5 < 9	$ 3x+5 \le 2$	
or	becomes the combined inequality	becomes the combined inequality	
\leq	-9 < 3x + 5 < 9	$-2 \le 3x + 5 \le 2$	

...zero, rewrite as an equality or inequality, or state the solution as "All Real

Numbers" or "No Solution" (see examples below)

>	3x+5 > 0	$ 3x + 5 \ge 0$
or	becomes the inequality	has the solution
≥	$3x + 5 \neq 0$	All Real Numbers
<	3x + 5 < 0	$ 3x+5 \le 0$
or	has	becomes the equality
≤	No Solution	3x + 5 = 0

...**negative**, state the solution as "All Real Numbers" or "No Solution" (see examples below)

>	3x + 5 > -4	$ 3x + 5 \ge -7$
or	has the solution	has the solution
≥	All Real Numbers	All Real Numbers
<	3x + 5 < -9	$ 3x+5 \le -2$
or	has	has
≤	No Solution	No Solution

Some equation forms of a line:

<u>Slope-Intercept Form</u>

y = mx + b

Point-Slope Form	Standard/General Form
$y - y_1 = m(x - x_1)$	Ax + By = C

Some equation forms of a circle:

<u>Standard Form</u>

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

 $\frac{\text{General Form}}{x^2 + y^2 + ax + by + c = 0}$

The average rate of change of a function from *a* to *b* is $\frac{f(b)-f(a)}{b-a}$

Given a line passing through points (x_1, y_1) and (x_2, y_2) , the slope *m* of the line is $m = \frac{rise}{run} = \frac{y_2 - y_1}{x_2 - x_1}$ as long as $x_2 \neq x_1$

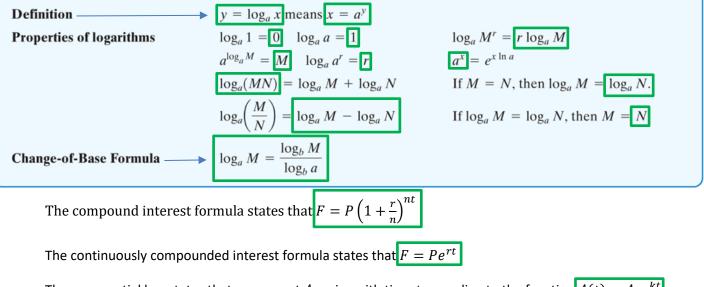
Some equation forms of a parabola:

Vertex FormStandard Form $y = a(x-h)^2 + k$ $y = ax^2 + bx + c$ with vertex $\left(-\frac{b}{2a}, c - \frac{b^2}{4a}\right)$

The Law of Exponents: Given a > 0 with $a \neq 1$: If $a^u = a^v$ then u = v

SUMMARY Properties of Logarithms

In the list that follows, a, b, M, N, and r are real numbers. Also, a > 0, $a \neq 1$, b > 0, $b \neq 1$, M > 0, and N > 0.



The exponential law states that an amount A varies with time t according to the function $A(t) = A_0 e^{kt}$ As long as the start time is 0, the value of k can be determined using the adder a and either the multiplier m or the divider d:

$$k = \frac{\ln m}{a}$$
 or $k = \frac{\ln(1/d)}{a}$