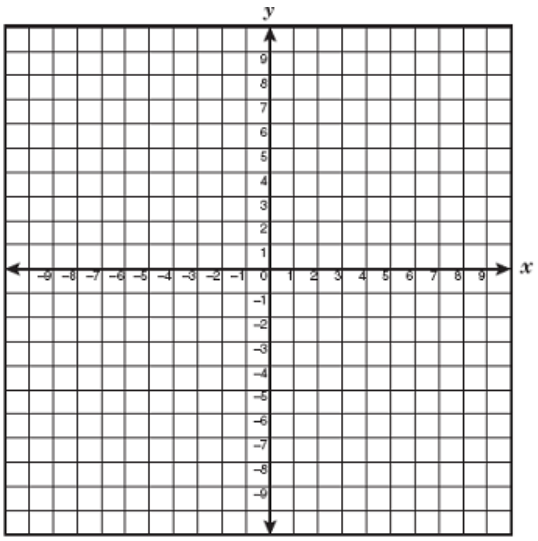
RC#5

QUADRATIC AND OTHER NONLINEAR FUNCTIONS

Write the equation for the quadratic parent function, and sketch its graph.

Equation: _____



How does changing the numbers in a quadratic equation affect the graph?

For $y = a(x - c)^2 + d$:

Positive a:_____

Negative a:_____

a > 1: _____

0 < a < 1:_____

+ d: _____

- d: _____

(x + c): _____

(x – c): _____

The maximum/minimum of a quadratic function is called the _____.

Calculator: 2^{nd} TRACE #3 or #4. Move cursor to left of vertex, press ENTER. Move cursor of right of vertex, press ENTER, then ENTER again.

Ex. Find the vertex of $y = 3x^2 + 2x - 1$.

What are the other words that mean the same as the *x-intercepts*?

_____

_____

_____

Calculator: $y_2 = 0$. 2^{nd} TRACE #5. Move cursor close to one x-intercept and press ENTER 3 times. Repeat the steps to find the other x-intercept.

Ex. Find the roots of $y = 3x^2 + 2x - 1$.

RC#5

Now You Try!

1. How does the graph of $y = x^2 - 1$ differ from the graph of $y = x^2 + 7$?

A. The graph of $y = x^2 - 1$ is 8 units to the left of the graph of $y = x^2 + 7$.

B. The graph of $y = x^2 - 1$ is 8 units to the right of the graph of $y = x^2 + 7$.

C. The graph of $y = x^2 - 1$ is 8 units above the graph of $y = x^2 + 7$.

D. The graph of $y = x^2 - 1$ is 8 units below the graph of $y = x^2 + 7$.

Simplifying with Exponents:

Laws of Exponents:

- When multiplying, _____ the exponents.
- When dividing, _____ the exponents.
- When you have a negative exponent, _____ to the other side of the fraction bar.
- Any base raised to the power of zero = _____.

5 Steps to Simplify:

1) Stamp
2) Multiply
3) Move
4) Divide
5) Simplify

Now You Try!

1. Which expression best represents $(3a^2b^3c)(-3ab)(-2a^3bc^3)$?

F. $18a^6b^5c^4$

G. $-18a^6b^3c^3$

H. $18a^6b^9c^4$

J. $-8a^6b^5c^4$

2. Which expression best represents the simplification of $(3m^{-2}n^4)(-4m^6n^{-7})$?

F. $-\frac{12m^4}{n^3}$

G. $-\frac{1}{12m^4n^3}$

H. $-\frac{m^4n^3}{12}$

J. $-\frac{12n^3}{m^4}$

3. Simplify the expression:

$$\frac{5a^{-3}b^4}{6a^5b^2c^0}$$