Name: _____

Identifying Quadratic Information from a Graph

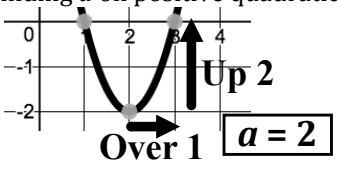
There are three forms of the quadratic equation: Standard ($y = ax^2 + bx + c$), Vertex ($y = a(x - h)^2 + k$), and Factored Form ($y = a(x - r_1)(x - r_2)$). Each has its own purpose and provides its own set of information.

Standard Form	Vertex Form	Factored Form

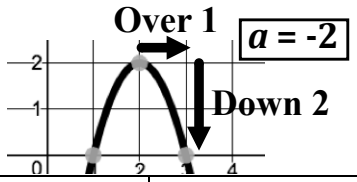
a is the only part that is found in all three forms.

a is the stretch, which is like the "slope" of the quadratic equation.
It tells you how much the graph moves up (when a is positive) or down (when a is negative).

Finding a on positive quadratic:

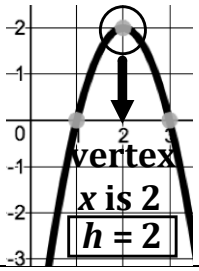


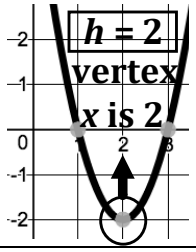
Finding a on a negative quadratic:



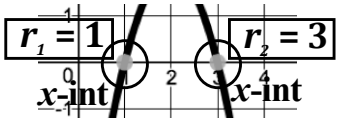
b is used to find the vertex and the x-intercepts. It is not any part of the graph on its own, though you can use the axis of symmetry ($x = \_\_$) and the stretch (a) to find b using the formula $x = -\frac{b}{2a}$.

h is the axis of symmetry. This is also known as the "middle x" or the x-value of the vertex.

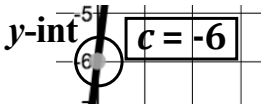




r_1 & r_2 are the x-intercepts, also called the **solutions, zeros** or **roots** of the quadratic. The graph of the quadratic will always cross the x-axis at $(r_1, 0)$ & $(r_2, 0)$.

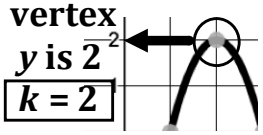


c is the y-intercept. The graph of the quadratic will always cross the y-axis at $(0, c)$.

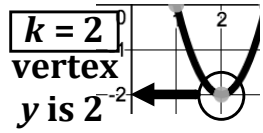


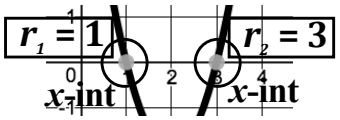
k is the maximum (top) or the minimum (bottom) of the graph. This is also known as y-value of the vertex.

When it's on top, it's the **maximum:**



When it's on bottom, it's the **minimum:**





For each given quadratic, identify a, c, h, k, r_1 & r_2.

EXAMPLE

$a = 3$

~~$b =$~~

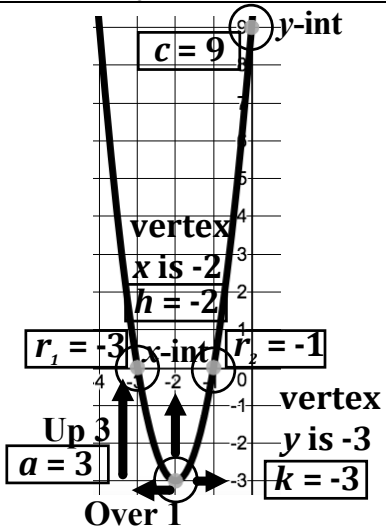
$c = 9$

$h = 2$

$k = -3$

$r_1 = -3$

$r_2 = -1$



1.

$a =$

~~$b =$~~

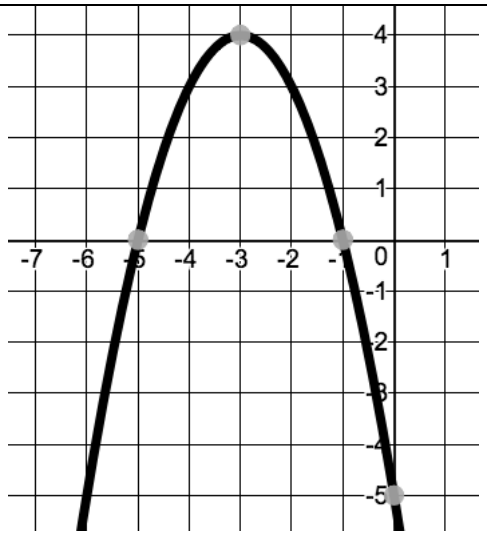
$c =$

$h =$

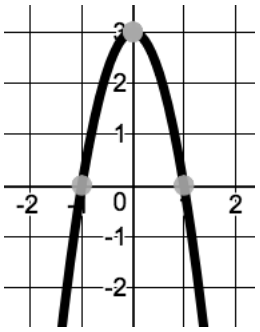
$k =$

$r_1 =$

$r_2 =$



2.



$a =$

~~$b =$~~

$c =$

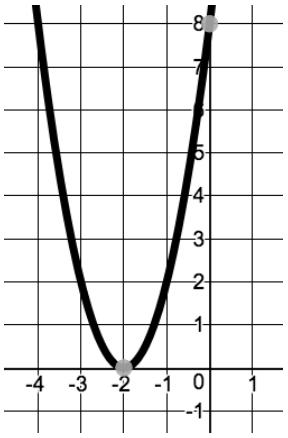
$h =$

$k =$

$r_1 =$

$r_2 =$

3.



$a =$

~~$b =$~~

$c =$

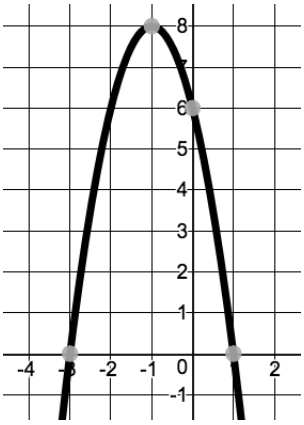
$h =$

$k =$

$r_1 =$

$r_2 =$

4.



$a =$

~~$b =$~~

$c =$

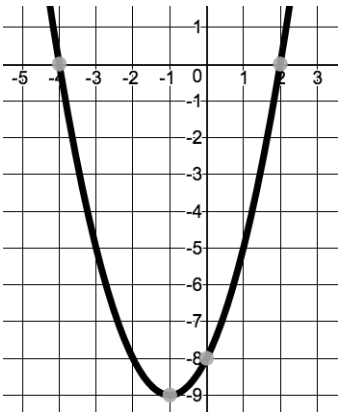
$h =$

$k =$

$r_1 =$

$r_2 =$

5.



$a =$

~~$b =$~~

$c =$

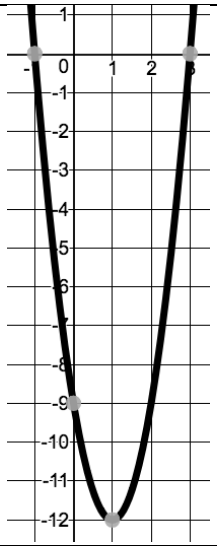
$h =$

$k =$

$r_1 =$

$r_2 =$

6.



$a =$

~~$b =$~~

$c =$

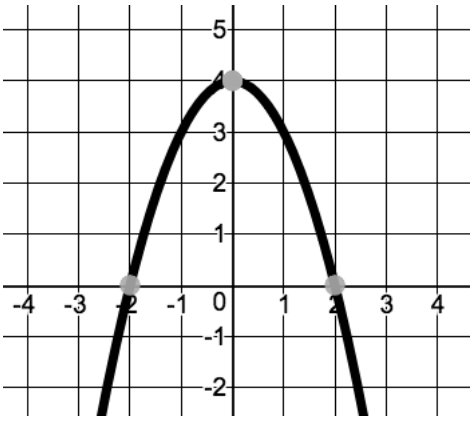
$h =$

$k =$

$r_1 =$

$r_2 =$

7.



$a =$

~~$b =$~~

$c =$

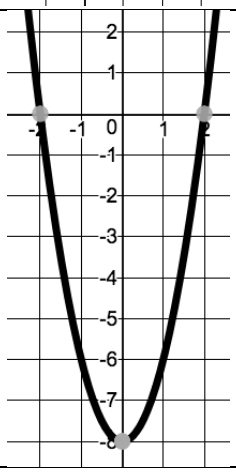
$h =$

$k =$

$r_1 =$

$r_2 =$

8.



$a =$

~~$b =$~~

$c =$

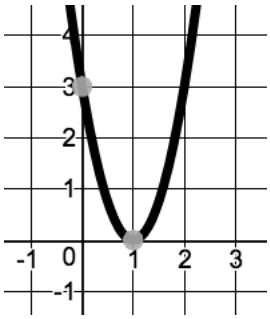
$h =$

$k =$

$r_1 =$

$r_2 =$

9.



$a =$

~~$b =$~~

$c =$

$h =$

$k =$

$r_1 =$

$r_2 =$