# Graphing Quadratic Functions (Read section 3.1 to prepare for class)

A **quadratic function** is one of the form $f(x) = ax^2 + bx + c$, where a, b, and c are numbers with a not equal to zero. The graph of a **quadratic function** is a curve called a parabola.

$f(x) = ax^2 + bx + c$

Positive a, so the parabola opens up.
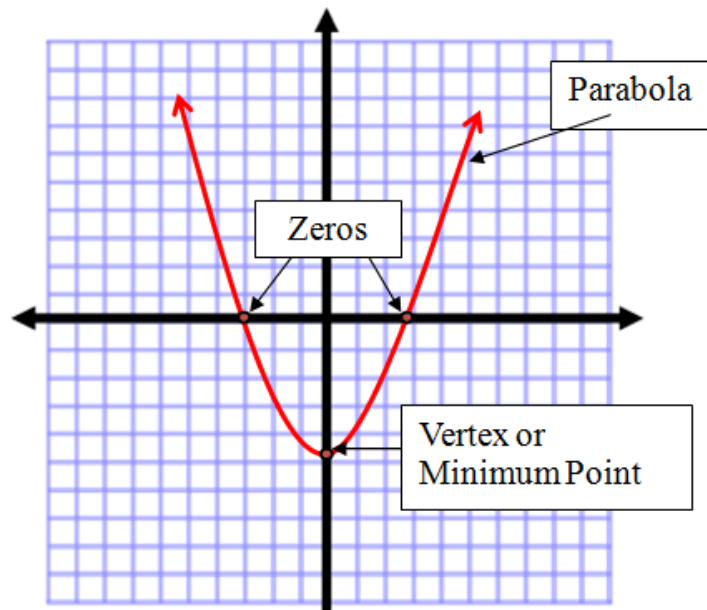
If a > 0 then parabola opens up as shown in example above but if a < 0 then parabola opens down as show in example below:

For the parabola below, $f(x) = ax^2 + bx + c$, a is negative

Vertex or Maximum Point

Parabola

Zeros
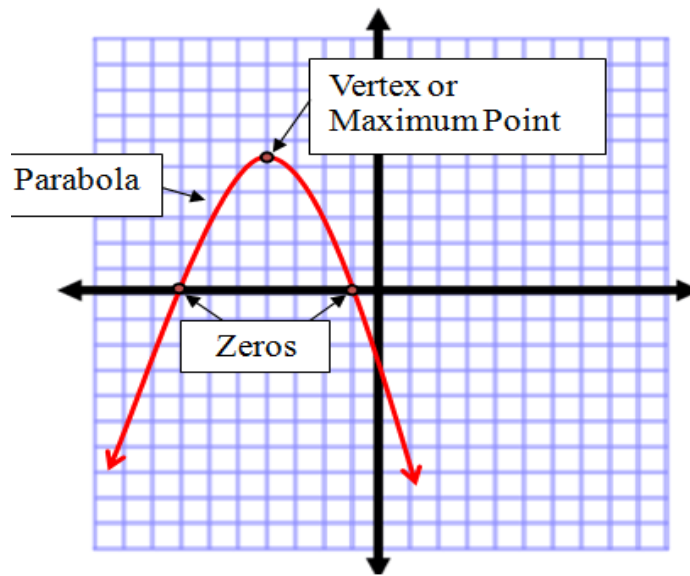
For the following quadratic function, what are the values of a, b and c?

$$f(x) = -x^2 + 2x + 3$$

a= _____   b= _____   c=_____

Does the graph of this function open up or down? _____

Is there a maximum point or a minimum point? _____

The Vertex of the parabola can be found by using the Vertex Formula below:

$$\left(\frac{-b}{2a}, f\left(\frac{-b}{2a}\right)\right)$$

For the function above, what will the x coordinate of the vertex be?

What will the y coordinate of the vertex be?

How do you find the x intercepts of the function?   What are they?