Journal Entry:

-The graph of a quadratic function is a U-shaped curve that has an axis of symmetry. What do you think this means?

-The following is an example of the Zero-Product Property. (x + 3)(x + 4) = 0, so x + 3 = 0 and x + 4 = 0. What do you think this means?

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Chapter 9
Quadratic Functions and Equations

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Section 9-1
Quadratic Graphs and Their Properties

Students will be able to graph quadratic functions.

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Remember from Chapter 8 that any polynomial of a degree 2 is called a quadratic.

A quadratic function is a type of nonlinear function that models certain situations where the rate of change is not constant.

-graph is symmetric curve with a highest or lowest point.

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Standard form of a Quadratic Function:

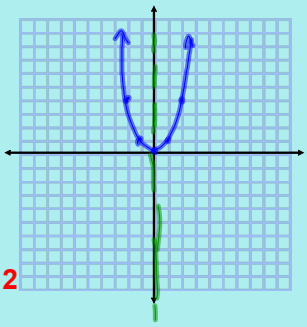
$y = ax^2 + bx + c$

$f(x) = x^2$ **is called the quadratic parent function.**

x	y
-2	4
-1	1
0	0
1	1
2	4

Graph:
shaped like a U
called a parabola

axis of symmetry:
vertical line that divides parabola in 2



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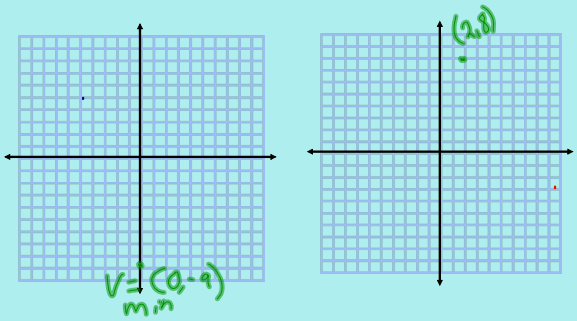
What is the vertex? It is a min or max?



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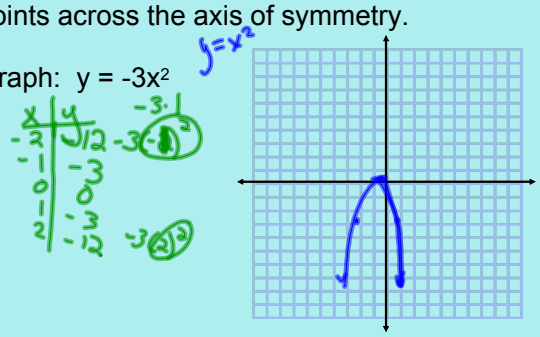
Since a parabola is symmetric, you can graph it quickly. Find the vertex first and several points outside of the vertex. Then reflect the points across the axis of symmetry.

Graph: $y = -3x^2$



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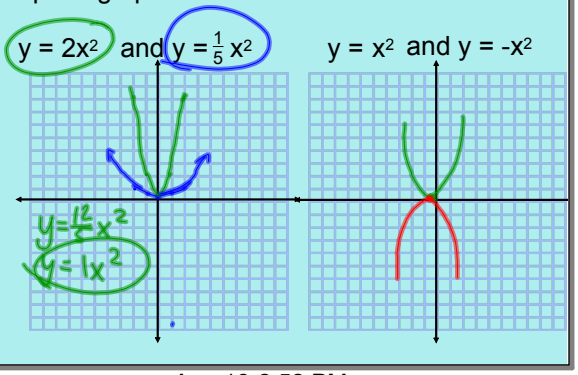
The coefficient of the x^2 term affects the width of a parabola as well as the direction it opens.

Graph and compare. What conclusions can you draw about determining width and opening up or down?

$y = 2x^2$ and $y = \frac{1}{5}x^2$ $\quad$ $y = x^2$ and $y = -x^2$



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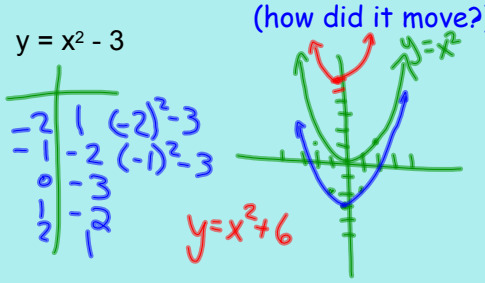
Graph and compare to the parent function:

$y = x^2 - 3$ (how did it move?)



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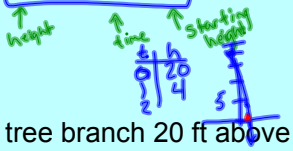
As an object falls, its speed continues to increase, so its height above the ground decreases at a faster and faster rate. Ignoring air resistance, you can model the object's height with the function $h = -16t^2 + c$.

h=height in feet
t = time in seconds
c = initial height in feet



An acorn drops from a tree branch 20 ft above the ground. The function $h = -16t^2 + 20$ gives the height, h of the acorn in feet after t seconds. Graph, about what time does it hit the ground?

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Hwk:
Practice 9 - 1 on MyHomework

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Apr 22-2:07 PM