

Algebra 9-3 Graphing Parabolas with an Automatic Grapher

1. On your graphing calculator, graph the following using a window of x -min = -10, x -max = 10, y -min=-10, and y -max = 10. If you hit the Zoom button and then 6:Zoom standard, the graph will automatically set this window up for you once you have entered your equations.

a.) $y = x^2 + 1$

b.) $y = x^2 + 4$

c.) $y = x^2 - 4$

2. Notice that $y = x^2 + 4$ is simply the same as $y = x^2 + 0x + 4$, which means the a -value is 1, the b -value is 0, and the c -value is 4.

What is the c -value of the graph $y = x^2 - 6$? _____

What does this tell you about the graph of $y = x^2 - 6$ using your knowledge
About what happened in the three graphs you did in problem 1?

3. Leaving your window in standard form, graph the following.

a.) $y = x^2 - 5x$ (Notice that this means the b -value is -5.)

b.) Did this make the parabola shift to the left or right of the y -axis? _____

c.) Graph $y = x^2 + 5x$ (Notice that this means the b -value is +5.)

d.) Did this make the parabola shift to the left or right of the y -axis? _____

e.) If you were to graph $y = x^2 - 10x$, would it be to the left or right of the y -axis? _____

f.) What can you conclude about the graph of a parabola if the b -value is negative? positive?
Notice that this is only true when the a value is positive.
See what you can conclude when the a value is negative.