



Graphing Calculator

A Preview of Lesson 6-6

TI-73

Families of Parabolas

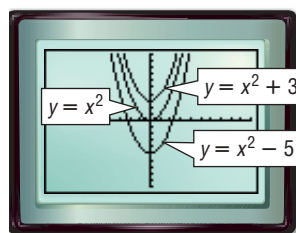
The general form of a quadratic equation is $y = a(x - h)^2 + k$. Changing the values of a , h , and k results in a different parabola in the family of quadratic functions. You can use a TI-73 graphing calculator to analyze the effects that result from changing each of these parameters.

Example 1

Graph each set of equations on the same screen in the standard viewing window. Describe any similarities and differences among the graphs.

$$y = x^2, y = x^2 + 3, y = x^2 - 5$$

The graphs have the same shape, and all open up. The vertex of each graph is on the y -axis. However, the graphs have different vertical positions.



Example 1 shows how changing the value of k in the equation $y = a(x - h)^2 + k$ translates the parabola along the y -axis. If $k > 0$, the parabola is translated k units up, and if $k < 0$, it is translated k units down.

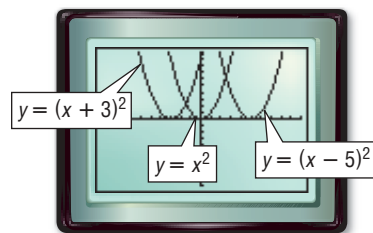
How do you think changing the value of h will affect the graph of $y = x^2$?

Example 2

Graph each set of equations on the same screen in the standard viewing window. Describe any similarities and differences among the graphs.

$$y = x^2, y = (x + 3)^2, y = (x - 5)^2$$

These three graphs all open up and have the same shape. The vertex of each graph is on the x -axis. However, the graphs have different horizontal positions.



Example 2 shows how changing the value of h in the equation $y = a(x - h)^2 + k$ translates the graph horizontally. If $h > 0$, the graph translates to the right h units. If $h < 0$, the graph translates to the left h units.



www.algebra2.com/other_calculator_keystrokes