

Another Form for a Parabola

Another common form for a parabola or a quadratic equation is the factored form: $y = a(x - r_1)(x - r_2)$

On your calculator, graph the equations $y=x+1$ and $y=x-5$ at the same time.

What is the x-intercept of each equation you graphed in the previous step?

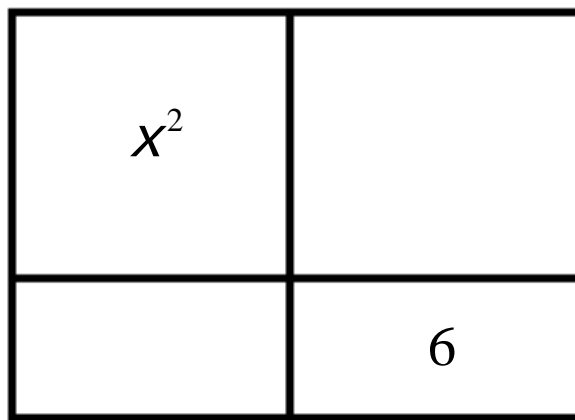
Using the same set of axes, graph $y=(x+1)(x-5)$. Describe the graphs are related.

Describe the location of the x-intercepts on the graph of $y=(x+1)(x-5)$.

Expand $y=(x+1)(x-5)$ to create the general form for a parabola. Graph the equation in general form on the same set of axes. What do you notice about this parabola and its x-intercepts? Is the graph of $y=(x+1)(x-5)$ a parabola?

Now you'll learn how to find the roots from the general form.

Complete the rectangle diagram whose sum is x^2+7x+6 .



A few parts on the diagram have been labeled to get you started.

Write the multiplication expression of the rectangle diagram in factored form.

Use a graph or table to check that this form is equivalent to the original expression.

Find the roots of the equation $0 = x^2 + 5x + 6$ from its factored form.

Rewrite each of the following equation in factored form by completing a rectangle diagram. Then find the roots of each. Check your work by making a graph.

$$0 = x^2 + 7x + 10$$

$$0 = x^2 + 2x - 15$$

$$0 = x^2 + 13x - 48$$

$$0 = x^2 - 11x + 24$$

Write the equation for this parabola in vertex form, factored form, and general form.

FACTORED FORM

What are the x-intercepts?

What two factors must be used in the factored form?

Graph $y = (x+3)(x-1)$ on your calculator.
How are the graphs similar and how are they different?

What is the vertex of your equation?

