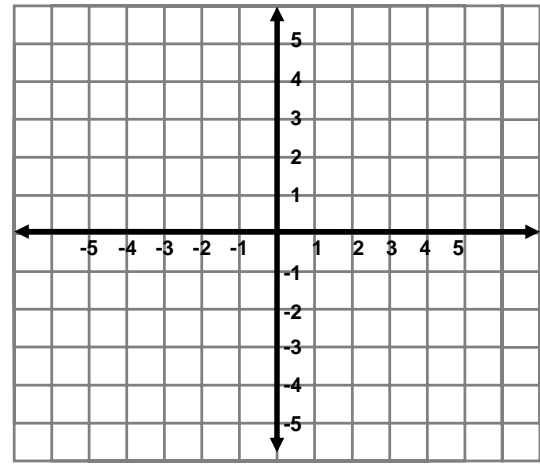


8.8

LINEAR AND QUADRATIC FUNCTIONS

GRAPHING LINEAR FUNCTIONS

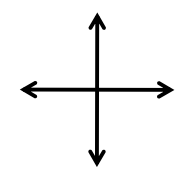


$$f(x) = 2x - 3$$

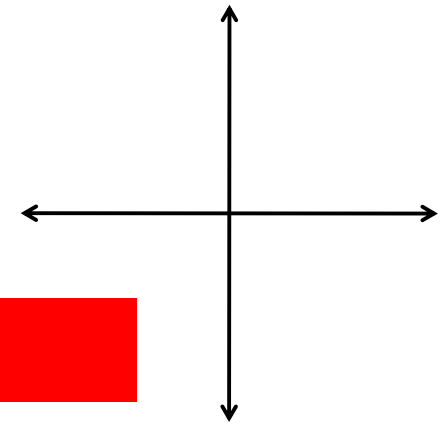
Slope-Intercept Form of a Linear Function

$$f(x) = mx + b$$

THE GRAPHS OF QUADRATIC FUNCTIONS

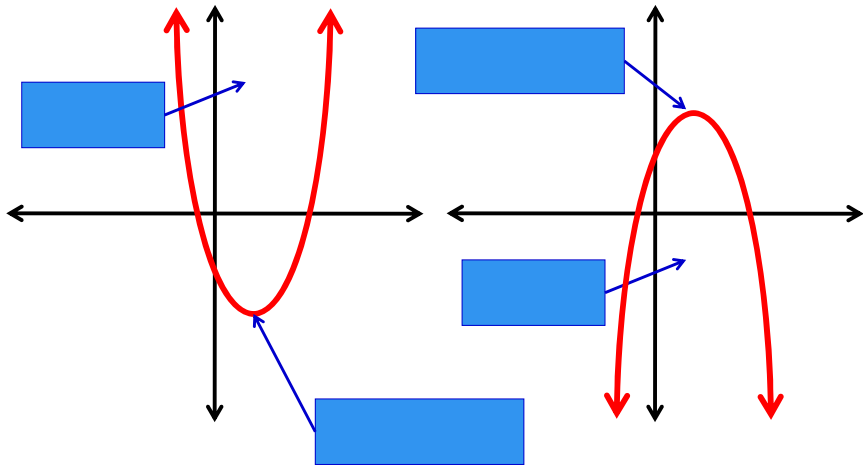


Linear Function Graph

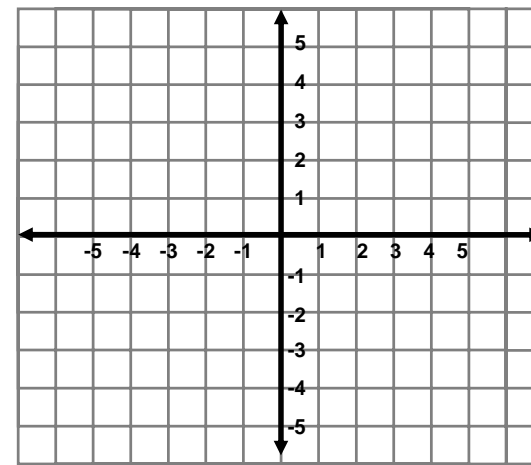


Quadratic Function Graph

PARTS OF QUADRATIC FUNCTIONS



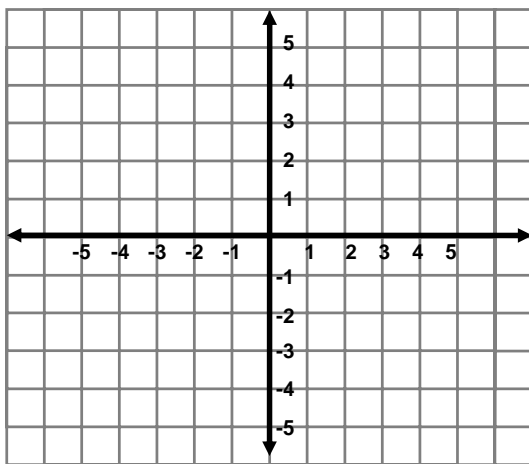
GRAPHING QUADRATIC FUNCTIONS



$$f(x) = x^2 - 6x + 4$$

| x | f(x) |
|---|------|
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

GRAPHING QUADRATIC FUNCTIONS



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

| x | f(x) |
|---|------|
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

Quadratic Function Graph

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

If "a" is positive, the parabola opens upward.
If "a" is negative, the parabola opens downward.

X-coordinate of the vertex of a parabola

In a parabola, to figure the x-coordinate of the vertex, use the following:

$$x = -\frac{b}{2a}$$

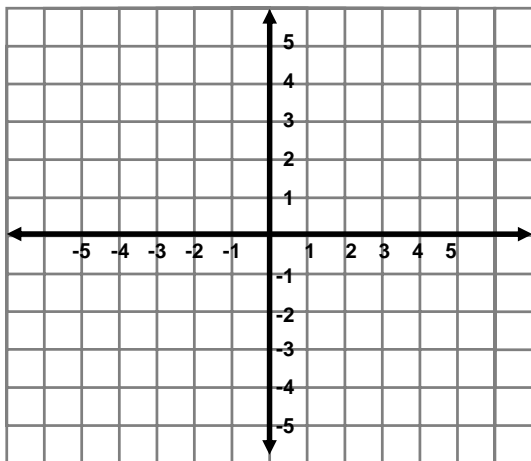
This also gives you the equation for the axis of symmetry.

GRAPHING QUADRATIC FUNCTIONS

Graph the following by first finding the vertex and four other points $f(x) = 2x^2 + 4x - 3$

GRAPHING QUADRATIC FUNCTIONS

Graph the following by first finding the vertex and four other points $f(x) = 2x^2 + 4x - 3$



| x | f(x) |
|---|------|
| | |
| | |
| | |
| | |
| | |
| | |

FINDING MINIMUMS AND MAXIMUMS

WITHOUT GRAPHING, find the coordinates of the vertex. Then give the equation of the axis of symmetry and the least value of the function.

$$f(x) = 5x^2 - 10x + 4$$

$$x = -\frac{b}{2a}$$

FINDING MINIMUMS AND MAXIMUMS

WITHOUT GRAPHING, find the coordinates of the vertex.
Then give the equation of the axis of symmetry and the greatest value of the function.

$$f(x) = 4x - x^2$$

$$x = -\frac{b}{2a}$$

ZEROS OF A FUNCTION

The zeros of a function are the inputs that you can put into $f(x)$ that would make it equal to 0.

$$f(x) = 3x - 9$$

ZEROS OF A FUNCTION

The zeros of a function are the inputs that you can put into $f(x)$ that would make it equal to 0.

$$f(x) = x^2 - 8x + 15$$