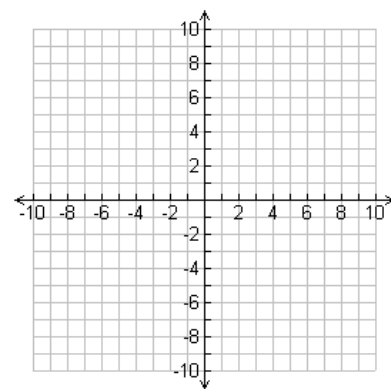
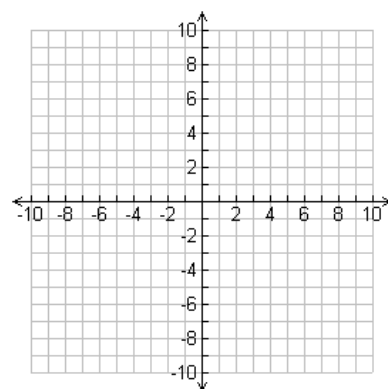


Put each quadratic in "standard form" by completing the square. Then, state the vertex and axis of symmetry and graph the quadratic. Plot at least 5 points, including the vertex. All work must be shown.

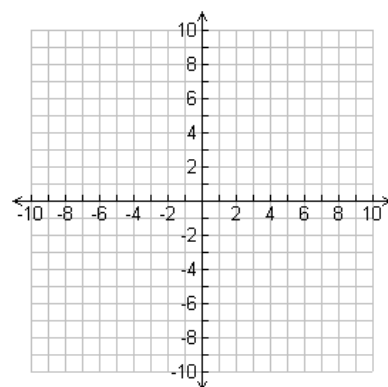
1.) $y = x^2 - 2x - 5$



2.) $y = x^2 - 6x + 5$



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



4.) Determine if the parabola has a maximum or minimum, and state the specific value. $y = -x^2 - 14x - 59$

5.) Describe the right-hand and left-hand behavior of the graph of each function.

a.) $-x^2 + 6x - 5$

b.) $\frac{1}{2}x^3 + 6x$

c.) $-2x^7 + 6x - 19$

6.) Find all of the real zeros of each function.

a.) $f(x) = 2x^4 - x^3 - 2x^2 + x$

b.) $g(x) = 3x^4 - 11x^2 + 6$

7.) Write a polynomial function whose zeros are given.

a.) $5, -1, 0$

b.) $-3, -\frac{1}{3}, 5$

8.) Divide $x^3 + 3x^2 - 4x - 12$ by $x^2 + x - 6$ using polynomial long division.

9.) Divide $\clubsuit x^2 - 1$ by $x + 2$ using polynomial long division.

10.) Divide $3x^3 + 2x - 11$ by $x - 3$ using synthetic division.

11.) Divide $2x^3 - 3x^2 - 5x - 12$ by $x - 3$ using synthetic division.