

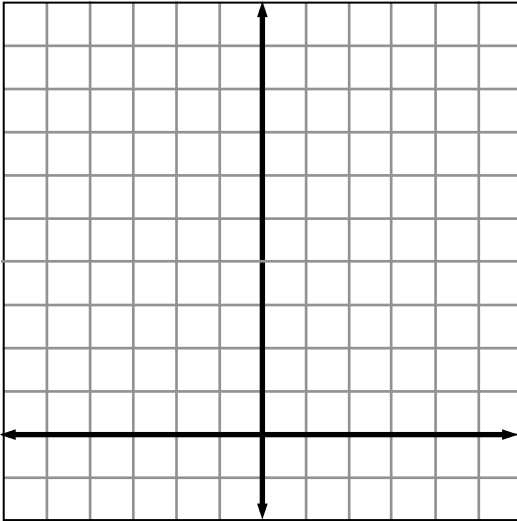
5.1 Characteristics of Parabolas Name \_\_\_\_\_

Determine the vertex, the axis of symmetry, and the graph of each equation

1.  $y = x^2 - 1$

vertex:

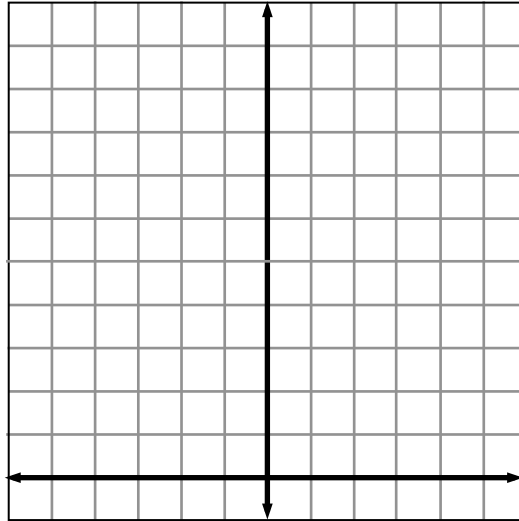
axis:



2.  $y = x^2 + 2$

vertex:

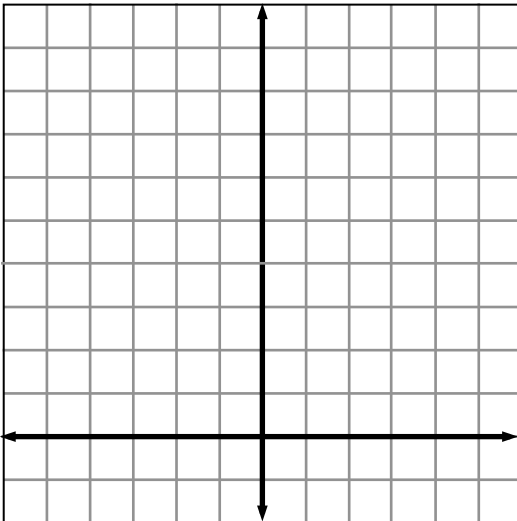
axis:



3.  $y = (x - 2)^2$

vertex:

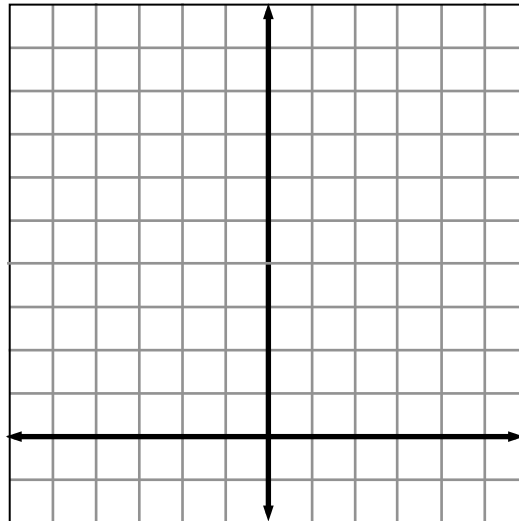
axis:



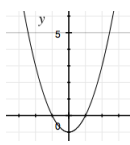
4.  $y = (x - 1)^2$

vertex:

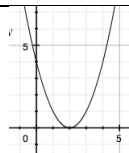
axis:



Answers: 1.  $(0, -1), x = 0,$



; 3.  $(2, 0), x = 2,$

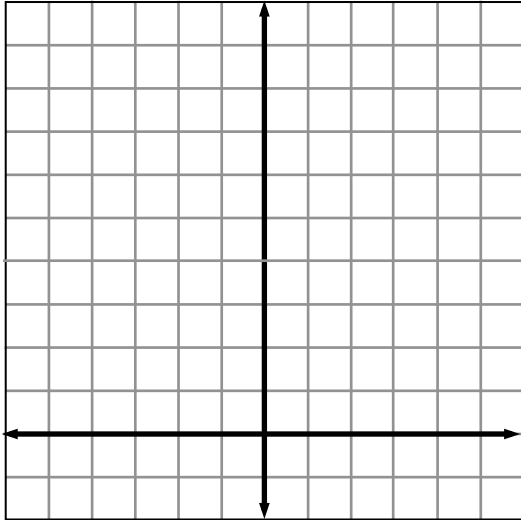


Determine the vertex, the axis of symmetry, and the graph of each equation

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

vertex:

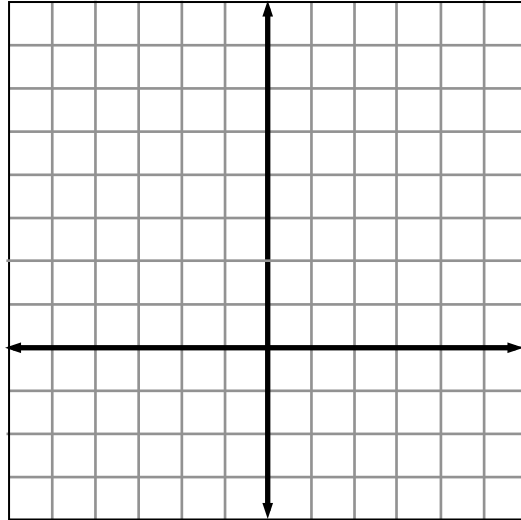
axis:



6.  $y = (x + 1)^2 - 3$

vertex:

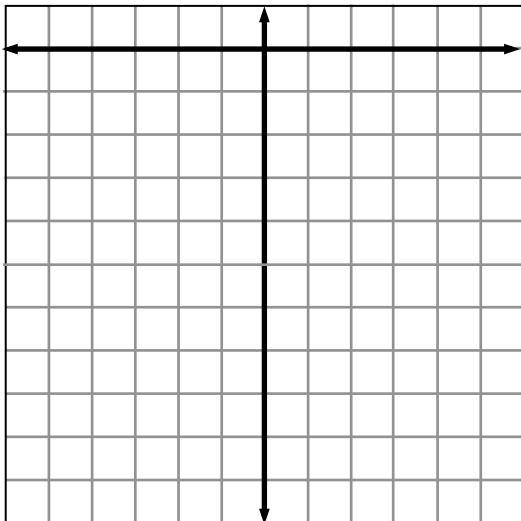
axis:



7.  $y = -x^2 - 1$

vertex:

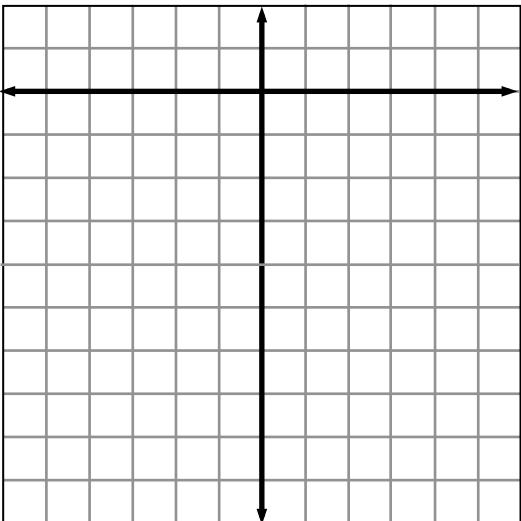
axis:



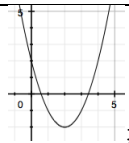
8.  $y = -x^2 + 2$

vertex:

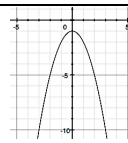
axis:



Answers: 5.  $(2, -2)$ ,  $x = 2$ ,



; 7.  $(0, -1)$ ,  $x = 0$ ,

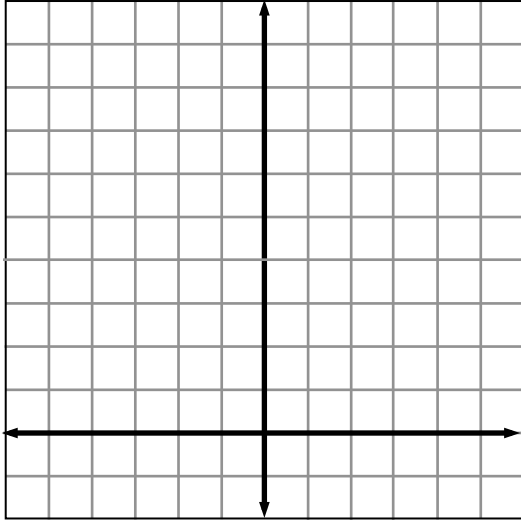


Solve and graph the solution set.

9.  $y = \frac{1}{2}x^2$

vertex:

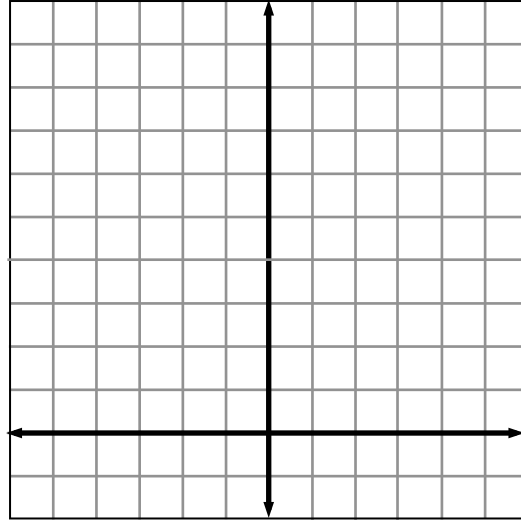
axis:



10.  $y = \frac{1}{4}x^2$

vertex:

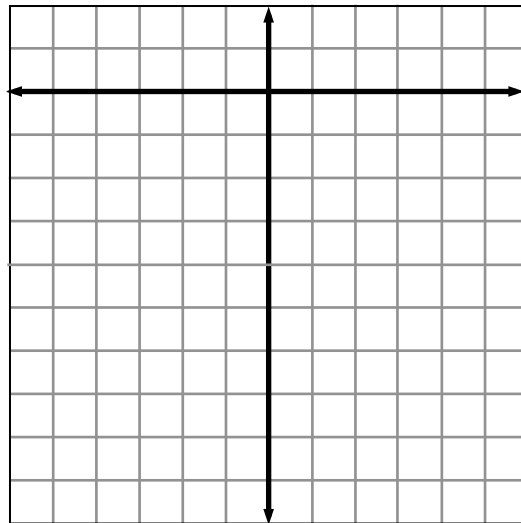
axis:



11.  $y = -2(x - 1)^2 + 2$

vertex:

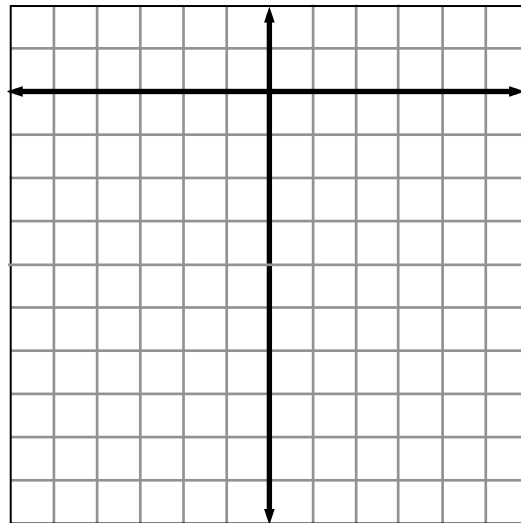
axis:



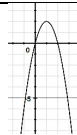
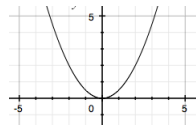
12.  $y = -2(x + 1)^2 + 1$

vertex:

axis:



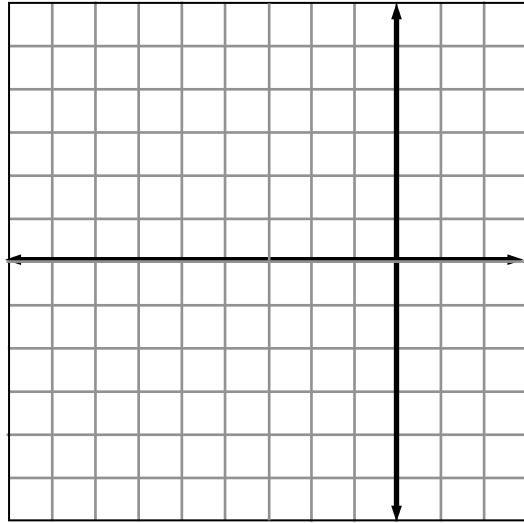
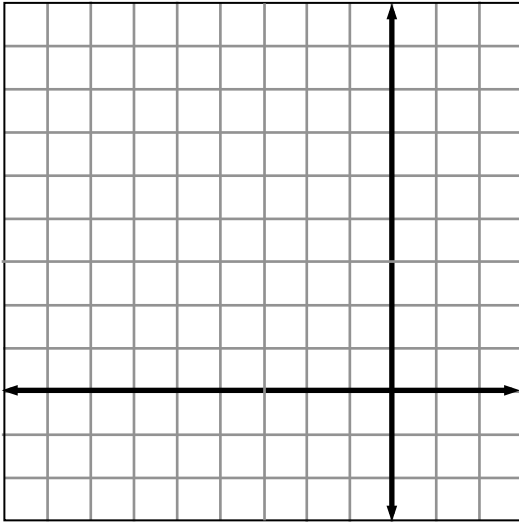
Answers: 9.  $(0, 0)$ ,  $x = 0$ ; 11.  $(1, 2)$ ,  $x = 1$ ,



Write each equation in the form  $y = a(x - h)^2 + k$  by completing the square. Then graph the parabola.

13.  $y = x^2 + 10x + 24$

14.  $y = x^2 + 8x + 10$



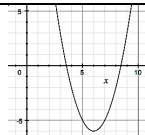
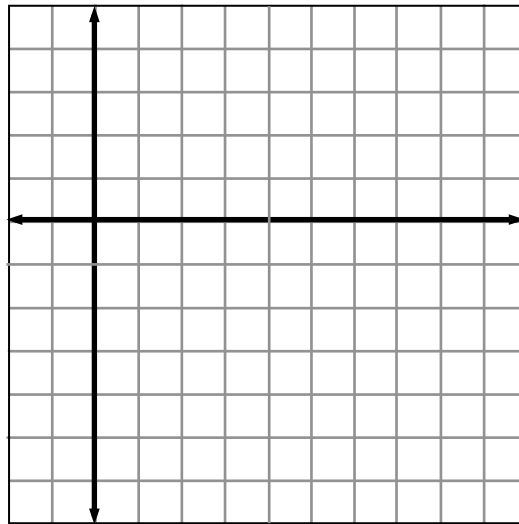
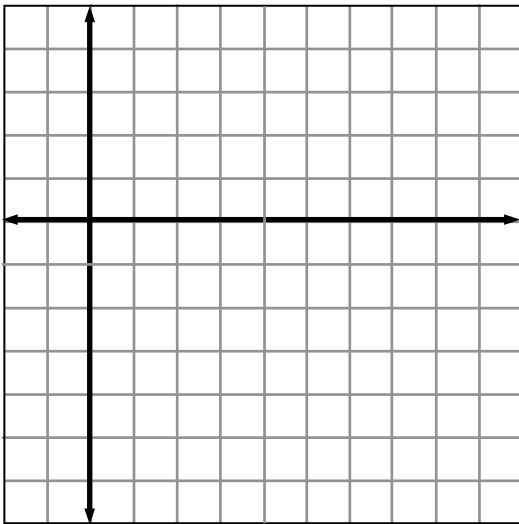
Answer: 13. Vertex:  $(-5, -1)$



Change the equation to the form  $y = a(x - h)^2 + k$  by completing the square. Then graph the parabola.

15.  $y = x^2 - 12x + 30$

16.  $y = x^2 - 4x - 1$



Answer: 15. Vertex:  $(6, -6)$ ,