Name: _____ Hour: _____

1. Identify the common 2nd difference and the next term for this quadratic sequence:
   -7, -5, 1, 11, 25, ...   2nd difference: _____   next term: _____

2. State which form each quadratic equation is in.

a.) $y = 2(x - 3)(x + 5)$ b.) $y = \frac{1}{4}(x+5)^2 + 3$ c.) $y = x^2 - 6x + 4$
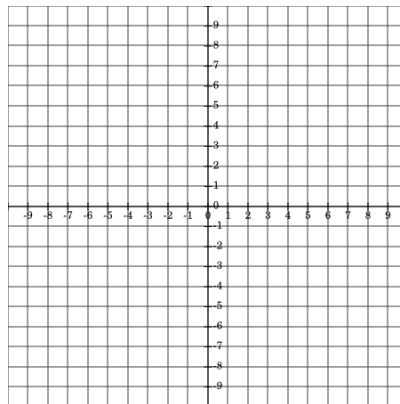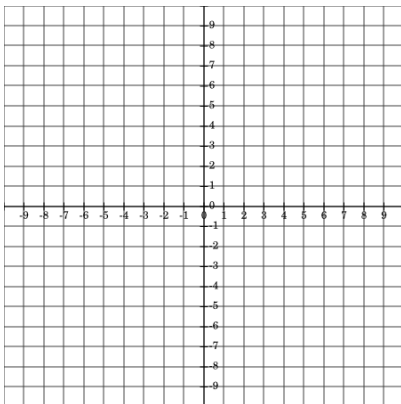
_____   _____   _____

Graph each quadratic function. Provide the coordinates of the vertex.

3. $y = 2(x + 1)^2 - 1$ **4.** $y = -(x-4)^2$
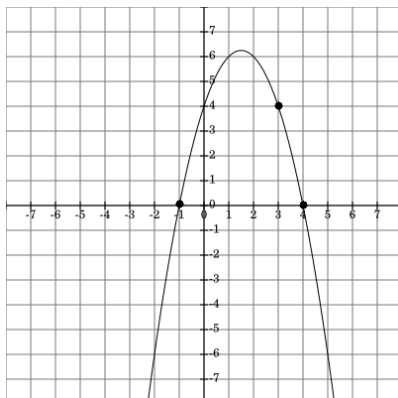
Vertex: (,   )   Vertex: (,   )

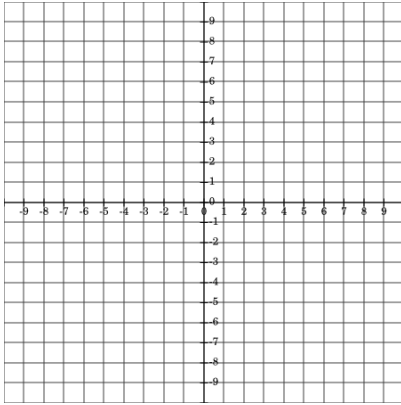**5.** Does the graph of $y = -\frac{1}{4}(x+7)^2 - 4$ open up or open down? Explain how you know.

6. Write an equation in Intercept Form for the parabola shown:

Graph each quadratic function. Provide the coordinates of the x-intercepts and the vertex.
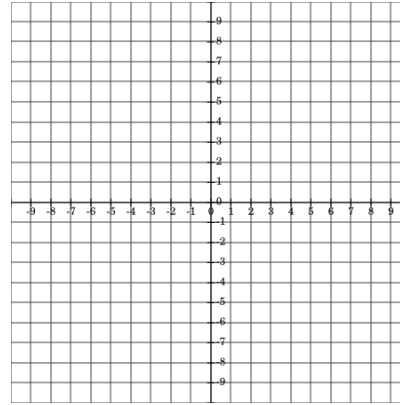
7. $y = -\frac{1}{2}(x+5)(x-1)$

Intercepts: (,   ) (,   ) Vertex: (,   )

8. $y = x(x-6)$

Intercepts: (,   ) (,   ) Vertex: (,   )

Solve each equation either by FACTORING or TAKING SQUARE ROOTS.
(Leave answers in radical form, NO DECIMALS!)

9. $x^2 - 3x - 4 = 0$	**10.** $2x^2 + 5 = 41$	**11.** $2x^2 - 16x + 24 = 0$
12. $x^2 = 196$	**13.** $x^2 + 13x = -40$	**14.** $-6(x+5)^2 = 120$

15. For this problem you must:

  • **Draw a picture, write an equation, solve the equation, AND answer using a SENTENCE!**

   Joe's rectangular garden is 6 meters long and 4 meters wide. He wishes to double the area of his garden by increasing its length and width by the same amount. Find the number of meters by which each dimension must be increased.

16. An object is dropped from a 60-foot bridge over a river. How long will it take for the object to reach the water? (*Write answer in sentence form, and don't forget to include units! Round to the nearest tenth.*)

Solve each equation either using the QUADRATIC FORMULA.
(Leave answers in radical form, NO DECIMALS!)

17. $x^2 - 5x - 14 = 0$	**18.** $x^2 + 3x = 2$	**19.** $-4x^2 - 9x - 3 = 0$

Solve each equation using the METHOD OF YOUR CHOICE.

20. $4(x + 8)^2 = 144$	**21.** $x^2 - 6x - 15 = 0$	**22.** $2x^2 + 9x = -7$