

11.6.D2 – VERTEX FORM OF QUADRATIC FUNCTIONS

Determine the vertex of each parabola. Refer to the 11.5 example “Identifying the Vertex of Quadratic Functions in Vertex Form” in the Chapter 11 Summary.

1. $f(x) = (x + 4)^2 + 2$

2. $f(x) = \frac{1}{2}(x - 2)^2 + 6$

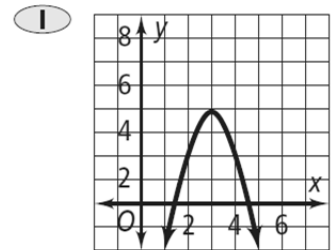
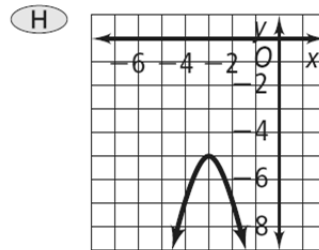
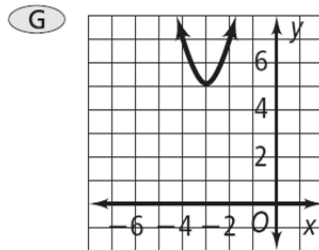
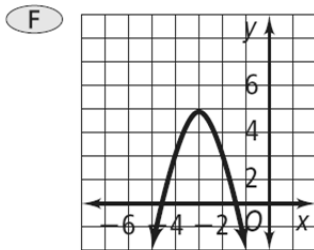
3. $f(x) = (x - 5)^2$

Use a graphing calculator to determine the vertex of each quadratic function in standard form. Then, rewrite the function in vertex form. Refer to the 11.6 example “Writing an Equation of a Parabola Given Information about its Graph” in the Chapter 11 Summary.

4. $f(x) = x^2 - 10x + 24$

5. $f(x) = 2x^2 - 4x - 6$

Write a quadratic function in vertex form with each set of given characteristics. **Let $a = \pm 2$.** Refer to the 11.6 example “Writing an Equation of a Parabola Given Information about its Graph” in the Chapter 11 Summary.

6. The vertex is $(-1, 4)$ & the parabola opens down.7. The vertex is $(3, -2)$ & the parabola opens up.8. What is the graph of the quadratic function $y = -2(x + 3)^2 + 5$? Explain your reasoning.

Identify the form of each quadratic function: standard form, factored form, or vertex form. Then, based only on the given equation, state all you know about the quadratic function’s key characteristics: direction of opening, vertex, axis of symmetry, zeros, and the y -intercept. Refer to the 11.6 example “Identifying Characteristics of a Parabola Given Its Equations in Different Forms” in the Chapter 11 Summary.

9. $f(x) = 5(x - 3)^2 + 12$

10. $f(x) = -(x - 8)(x - 4)$

11. $f(x) = -3x^2 + 5x$

12. $f(x) = \frac{2}{3}(x + 6)(x - 1)$

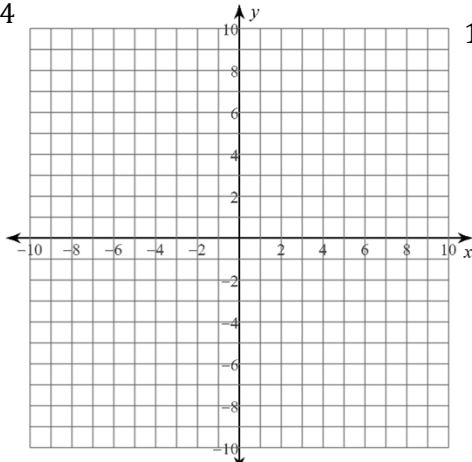
13. $f(x) = -(x + 2)^2 - 7$

14. $f(x) = 2x^2 - 1$

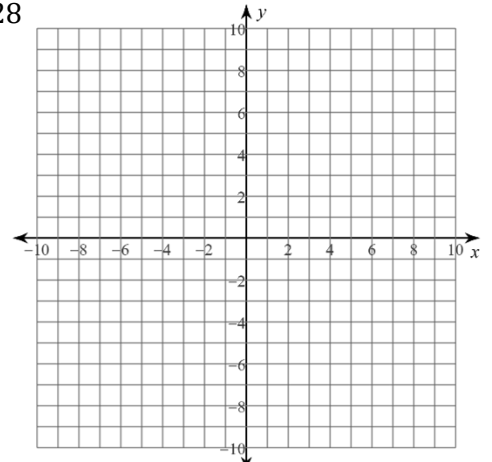
15. Which of the following statements about the graph of the quadratic function $y = 4(x - 6)^2 + 1$ are true? Select ALL that apply.
- The vertex of the graph is (6, 1).
 - The graph is a parabola that opens upward.
 - The graph is symmetric about the line $x = -6$.
 - The graph is symmetric about the line $y = 1$.
 - All points on the graph lie above the x -axis.
 - All points on the graph lie to the right of the y -axis.

1st SEMESTER SPIRAL REVIEW – Graph each system of linear inequalities. Refer to the **Systems of Inequalities** section on your 1st semester summary card.

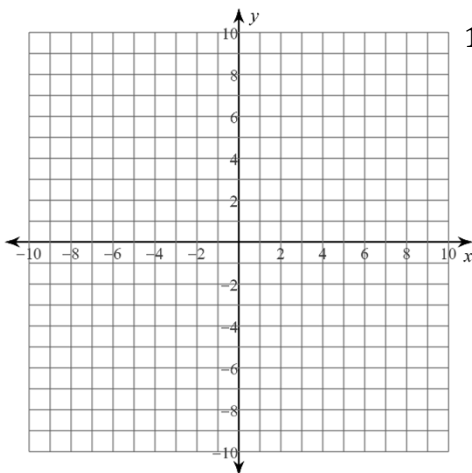
16. $4x - 7y \leq 14$
 $x < 7$



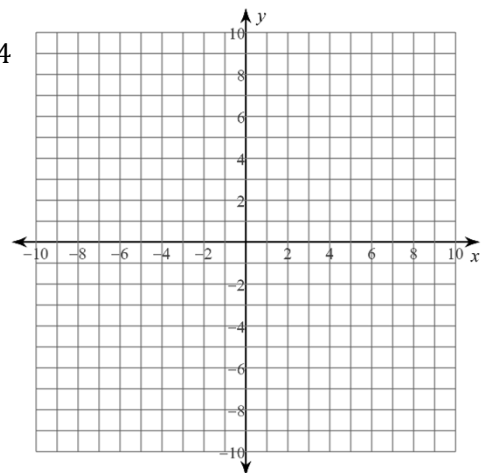
17. $3x + 4y > 28$
 $2x - y < 4$



18. $y > -6$
 $4x - 3y > 6$

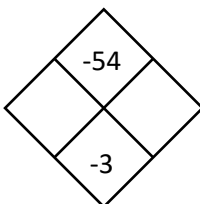


19. $x + 2y \geq 2$
 $3x + y < -4$

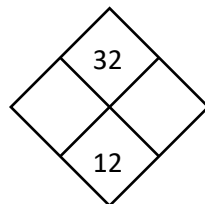


An X-box is a pattern for which the product of two numbers is placed on top, while the sum of the same two numbers is placed on the bottom. This pattern is demonstrated in the X-box below. Copy and complete each X-box pattern below.

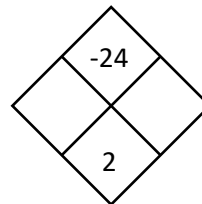
20.



21.



22.



PRODUCT \Rightarrow

