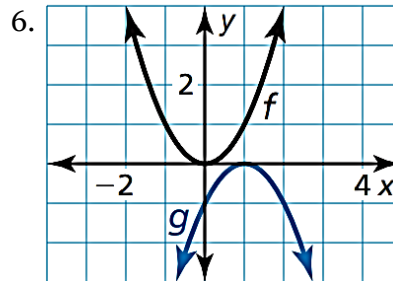
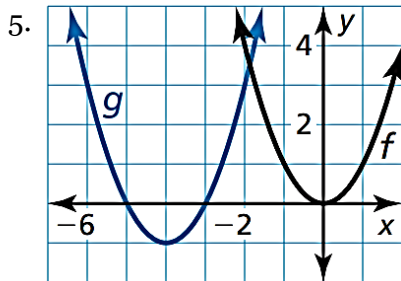


11.7.D3 – TRANSFORMATIONS OF QUADRATIC FUNCTIONS

Write an equation in vertex form for a quadratic function $g(x)$ with the given characteristics. Refer to the 11.7 example “Writing Equations Given Transformations” in the Chapter 11 Summary.

- The function $g(x)$ is a horizontal reflection of the graph of $f(x) = x^2$ and is translated 3 units up.
- The function $g(x)$ is vertically dilated with a dilation factor of 6 and is translated 1 unit up and 4 units right.
- The function $g(x)$ is a horizontal reflection of the graph of $f(x) = x^2$, is vertically dilated with a dilation factor of 3, and is translated 2 units down and 4 units right.
- The function $g(x)$ is vertically dilated with a dilation factor of $1/2$ and is translated 2 units down and 6 units left.

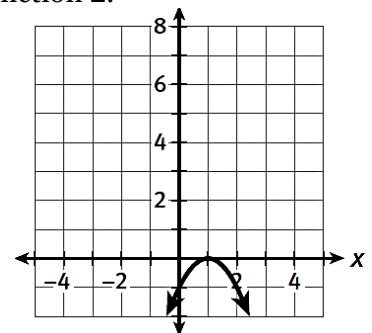
Describe the transformation on the graph of $f(x) = x^2$ to produce the graph of $g(x)$. Write an equation in vertex form.



7. The equation and graph (at right) represent two different quadratic functions for the parabolic paths of comets.

Function 1: $y = -3x^2 + 4$

Function 2:



Identify the maximum value of each function. Which function has the greater maximum value?

8. Identify the table that represents a parabolic comet path. Explain your reasoning. Refer to the 11.2 example “Identifying Linear & Quadratic Functions” in the Chapter 11 Summary.

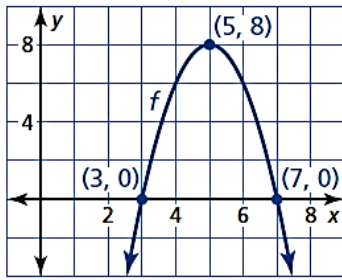
A.

x	y
-2	-1
-1	-4
0	-5
1	-4
2	-1

B.

x	y
-2	4
-1	-3
0	-5
1	-3
2	4

9. For the function shown, identify the domain, range, vertex, axis of symmetry, y -intercept, zeros, and the intervals of increase and decrease. Refer to the *THREE 11.3 examples "Identifying/Determining Domain & Range/ Zeros/Intervals of Increase & Decrease of a Quadratic Function"* in the Chapter 11 Summary.



Domain: _____ y -intercept: _____

Range: _____ Zeros: _____

Vertex: _____ Interval of increase: _____

Axis of symmetry: _____ Interval of decrease: _____

10. Use the zeros to write the factored form of the quadratic function. Let $a = \pm 1$. 11. Use the vertex to write the vertex form of the quadratic function. Let $a = \pm 1$.

Match each quadratic function with its graph.

12. $g(x) = -(x - 2)^2$

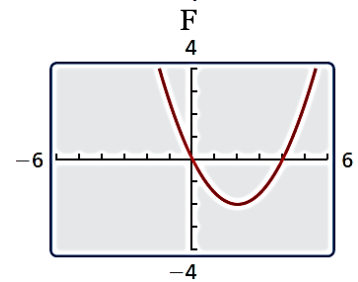
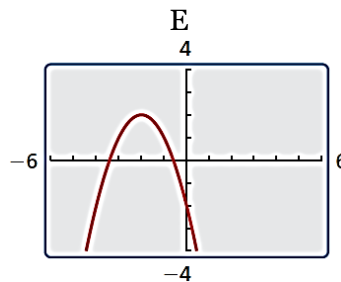
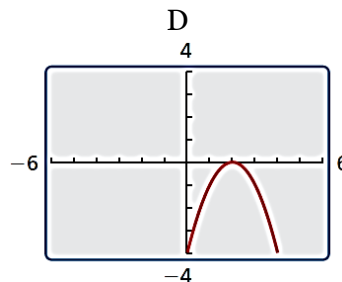
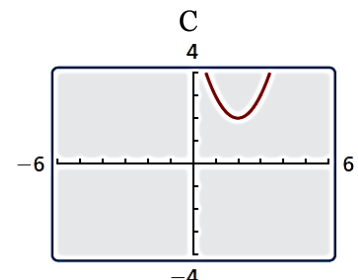
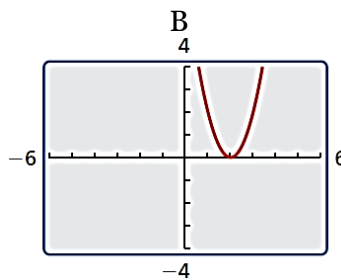
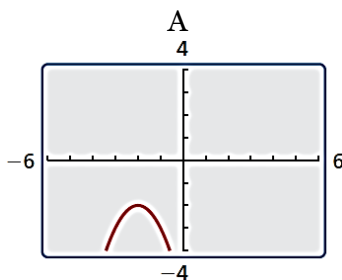
13. $g(x) = (x - 2)^2 + 2$

14. $g(x) = -(x + 2)^2 - 2$

15. $g(x) = 0.5(x - 2)^2 - 2$

16. $g(x) = 2(x - 2)^2$

17. $g(x) = -(x + 2)^2 + 2$



Determine the direction of opening, the x -intercepts, and the vertex of each quadratic function. Refer to the 11.4 example "Determining x -Intercepts from Functions in Factored Form" AND the 11.5 example "Determining the Vertex of Quadratic Functions" in the Chapter 11 Summary.

18. $y = 7(x - 2)(x + 6)$

- DIRECTION OF OPENING
- X-INTERCEPTS
- VERTEX

19. $y = -7(x - 8)(x + 4)$

- DIRECTION OF OPENING
- X-INTERCEPTS
- VERTEX

20. $y = -2(x + 1)(x + 7)$

- DIRECTION OF OPENING
- X-INTERCEPTS
- VERTEX

21. $y = 5(x + 7)(x - 5)$

- DIRECTION OF OPENING
- X-INTERCEPTS
- VERTEX