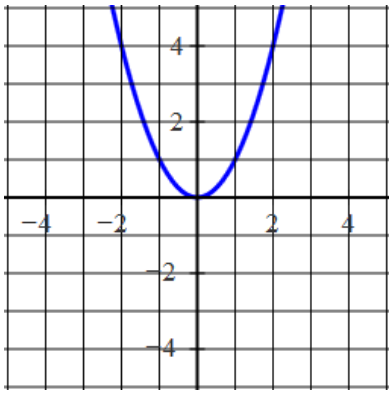
NAME_____**DATE**_____**PER.**_____

REVIEW: QUADRATIC FUNCTIONS – Part 2

Write the function for each of the following.

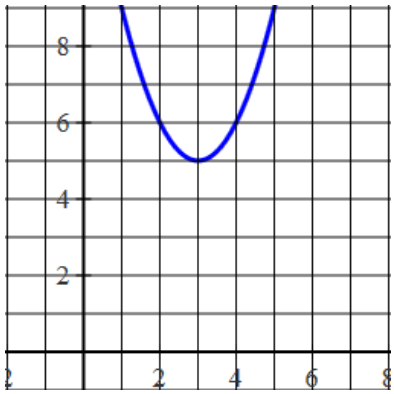
1. _____



Vertex: _____

Axis of Symmetry: _____

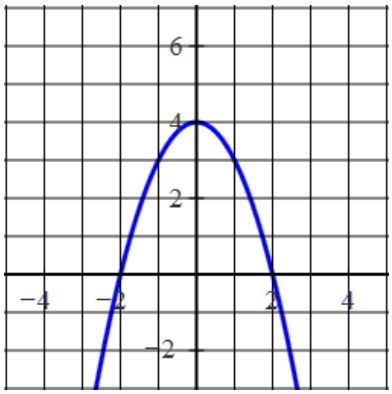
2. _____



Vertex: _____

Axis of Symmetry: _____

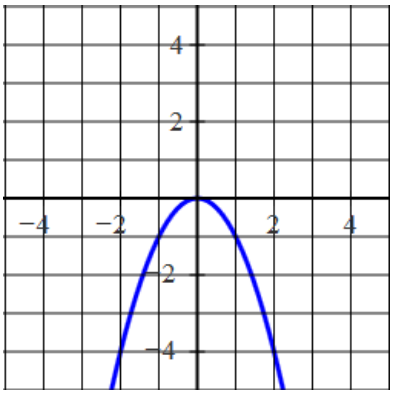
3. _____



Vertex: _____

Axis of Symmetry: _____

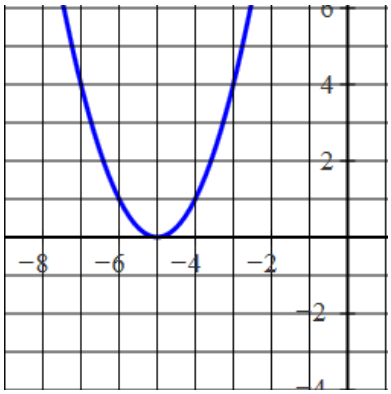
4. _____



Domain: _____

Range: _____

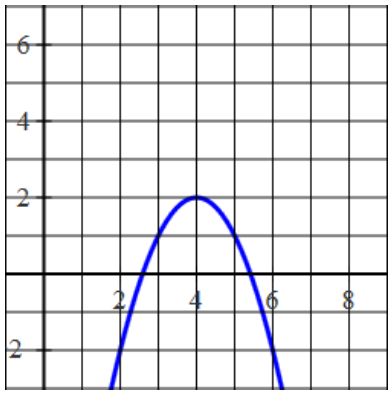
5. _____



Domain: _____

Range: _____

6. _____



Domain: _____

Range: _____

Describe the transformation from the quadratic parent function.

7. $f(x) = (x + 1)^2 + 4$	
8. $f(x) = -2(x - 7)^2 - 8$	
9. $f(x) = \frac{1}{2}(x - 3)^2 + 4$	

Answer the following, showing work when appropriate.

10. If the graph of the function $y = 2.7x^2 + 4$ is shifted 5 units down, write the equation that could represent the shifted graph.

11. If the graph of the quadratic parent function is compressed by a factor 1/3, shifted 2 units up, and 6 units to the right, write the equation that could represent the transformed graph.

12. Write the equation that describes the transformation of the linear parent function if it is shifted left 3 units, up 4 units, and made steeper by a factor of 2.

13. How would the graph of the function $y = x^2 + 3$ be affected if the function were changed to $y = x^2 – 7$?

A The graph would shift 10 units up.

B The graph would shift 10 units down.

C The graph would shift 10 units right.

D The graph would shift 10 units left.

14. In the graph of the function $f(x) = x^2 – 7$, which describes the shift in the vertex of the parabola if, in the function, -7 is changed to -4?

A 3 units up

B 7 units up

C 3 units down

D 7 units down

15. How do the graphs of the functions $f(x) = (x + 8)^2$ and $g(x) = (x – 4)^2$ relate to each other?

A The graph of *f(x)* is 12 units above the graph of *g(x)*.

B The graph of *f(x)* is 4 units above the graph of *g(x)*.

C The graph of *f(x)* is 12 units to the left the graph of *g(x)*.

D The graph of *f(x)* is 4 units to the left the graph of *g(x)*.

16. Compared to the graph of the parent function, the graph of $y = \frac{1}{4}x^2 + 6$ is:

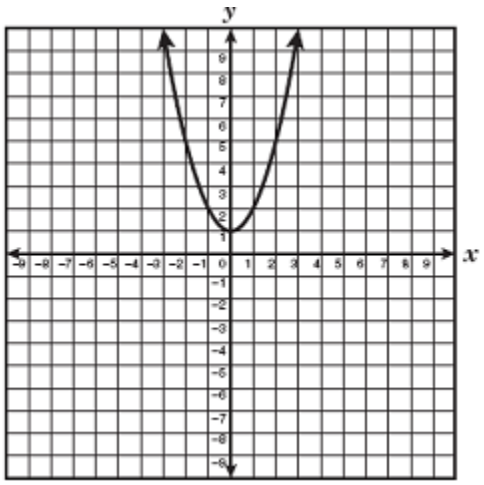
A Stretched and translated up

B Compressed and translated down

C Stretched and translated up

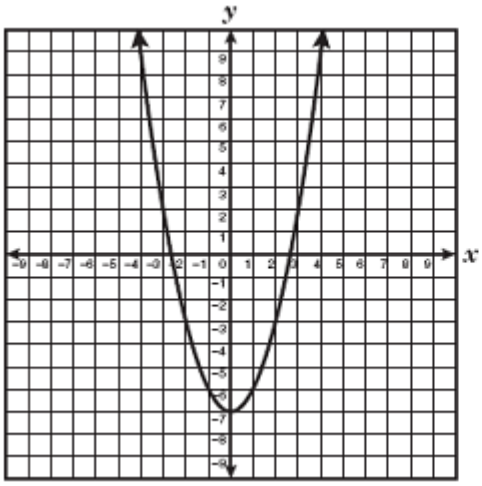
D Compressed and translated up

17. The graph of a function is shown below.

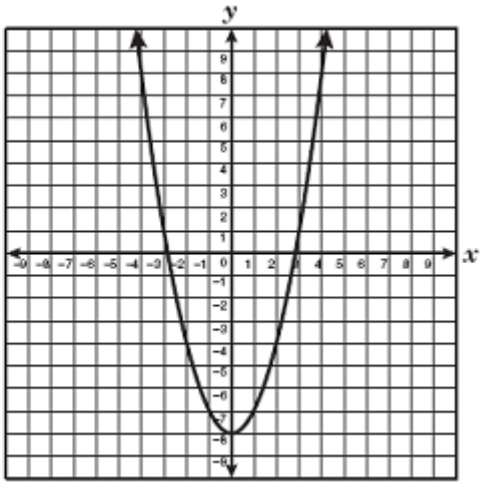


If the graph is translated 6 units down, which of the following best represents the resulting graph?

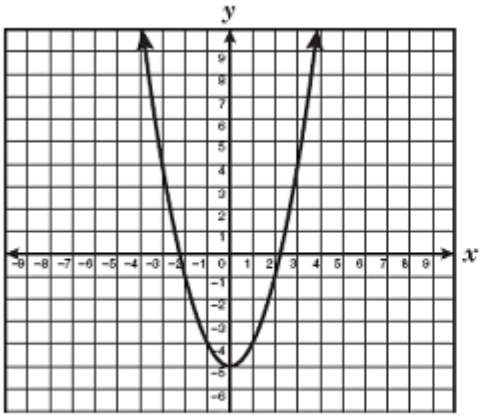
A



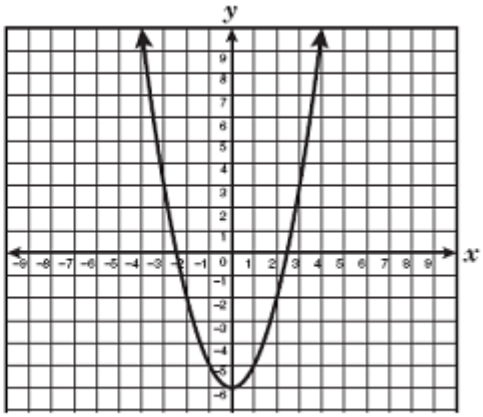
C



B



D



18. Which of the following lists the functions of the form $y = ax^2$ in order from the widest to the narrowest graph?

A $y = \frac{7}{2}x^2, y = 3x^2, y = \frac{1}{2}x^2, y = 2x^2$

B $y = \frac{1}{2}x^2, y = 3x^2, y = 2x^2, y = \frac{7}{2}x^2$

C $y = \frac{1}{2}x^2, y = 2x^2, y = 3x^2, y = \frac{7}{2}x^2$

D $y = 2x^2, y = \frac{1}{2}x^2, y = 3x^2, y = \frac{7}{2}x^2$

Circle the values of *a* that *compress* $y = x^2$

$\frac{7}{2}$ $\frac{1}{2}$ 3 2

Circle the values of *a* that vertically *stretch* $y = x^2$

$\frac{7}{2}$ $\frac{1}{2}$ 3 2

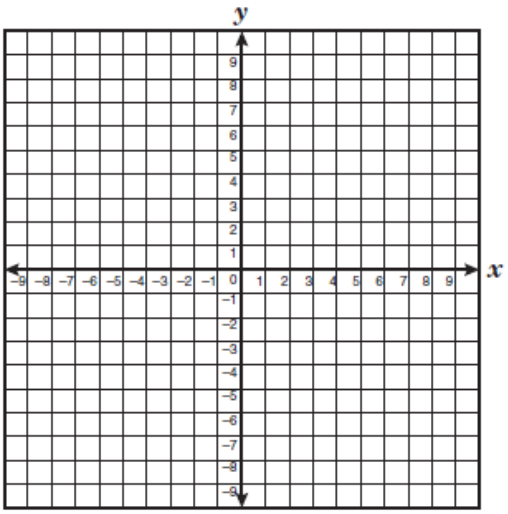
19. How does the graph of $g(x) = -3x + 4$ compare to the graph of the linear parent function?

I. g(x) is reflected across the x-axis

II. g(x) is less steep

III. g(x) is steeper

IV. g(x) has a smaller y-intercept



A I and III

B I, III, and IV

C III only

D I, II, and IV

For Examples 20 – 24, f(x) can be linear *or* quadratic. Match the given equation with the transformation described. Each question may have more than one answer.

_____ 20) g(x) = 0.5f(x) + 6

_____ 21) g(x) = f(x + 2)

_____ 22) g(x) = -3.5f(x – 1)

_____ 23) g(x) = f(x) + 23

_____ 24) g(x) = -f(x – 2) – 17

A. Vertical Stretch (steeper)

B. Vertical Compression (less steep)

C. Reflection

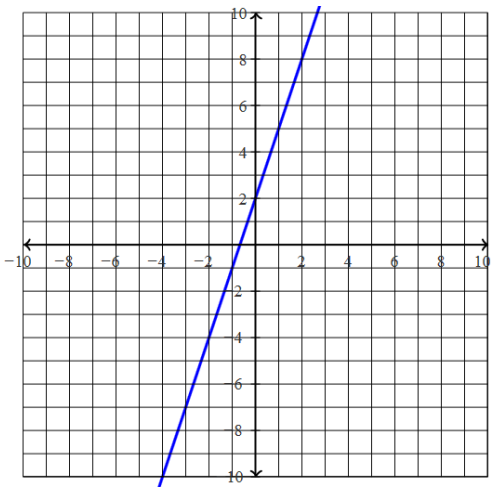
D. Shift left

E. Shift right

F. Shift up

G. Shift down

25. The graph of a linear function is shown.



If the slope of the line shown is halved and the y-intercept decreases by 7, what is the equation of the new/transformed function?

_____26. Compared to the quadratic parent function, which function represents a translation of 3 units to the right and a reflection across the x-axis?

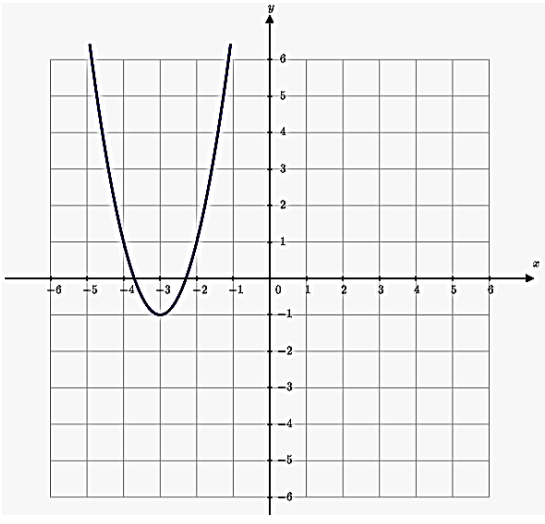
A. $f(x) = (x + 3)^2 - 1$

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

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

D. $f(x) = x^2 + 3$

_____27. Which function represents the graph shown?



A. $f(x) = -2(x - 3)^2 + 1$

B. $f(x) = 2(x + 3)^2 - 1$

C. $f(x) = (x + 3)^2 + 2$

D. $f(x) = ½ (x - 3)^2 - 1$

28. What is the vertex of $y = -2(x - 7)^2 - 8$?

29. What is the vertex of $y = (x + 1)^2 + 4$?

30. Which function represents the image of $y = x^2$ after a shift 9 units to the right?

A. $h(x) = x^2 - 18x + 81$

B. $h(x) = x^2 + 18x + 81$

C. $h(x) = x^2 + 81$

D. $h(x) = x^2 - 81$

31. If the quadratic parent function is reflected across the x-axis, shifted down 1 unit, and left 3 units, which equation represents the transformed function?

A. $h(x) = x^2 + 6x + 8$

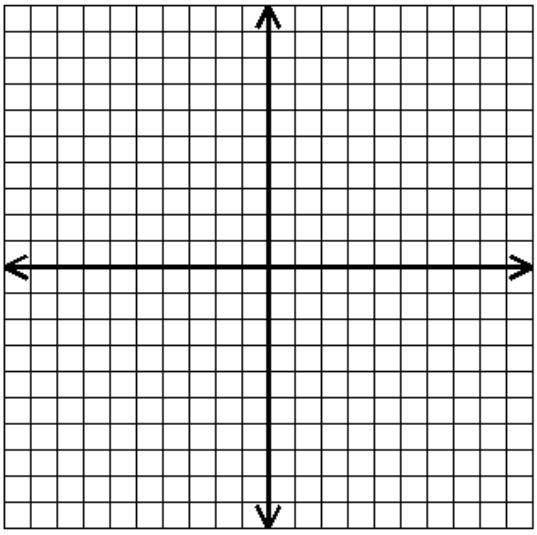
B. $h(x) = -x^2 - 3x - 11$

C. $h(x) = -x^2 - 6x - 10$

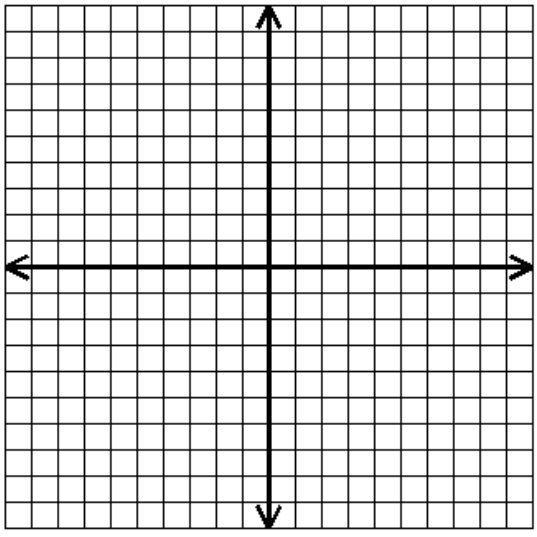
D. $h(x) = -x^2 - 10$

Review. Show all work.

32. $5x - 3y = -6$ m = _____ b = _____



33. $x - 3y < 15$ m = _____ b = _____



34. Find the area of a square that has a side length of $(a - 3)$.

35. Find the area of a rectangle with side lengths $2m^2n^{-5}$ and $3m^4n^{-6}p^3$.