Transformations of All Functions

$-f(x)$	
$f(-x)$	
$f(x) + k$	
$f(x) - k$	
$f(x + k)$	
$f(x - k)$	
$k \cdot f(x)$	

I. Describe the following transformations:

1. $f(x - 3) + 8$ _____
2. $5f(x) - 2$ _____
3. $-f(x + 4)$ _____
4. $\frac{1}{2} f(-x)$ _____
5. $-2f(x + 1) - 7$ _____

II. Identify the function and describe the transformations:

6. $g(x) = 3(x - 1)^2 - 6$ Function: _____

Transformations: _____ , _____ , _____

7. $h(x) = -5(2)^{x+4}$ Function: _____

Transformations: _____, _____, _____

8. $k(x) = x + 6$ Function: _____

Transformations: _____

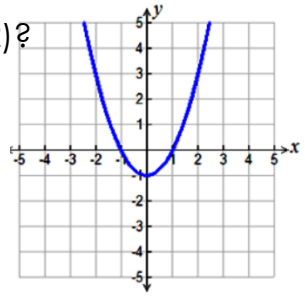
III. Give the best answer to the following questions.

9. What is the effect on the graph of the function $f(x) = x^2 + 2$ when it is changed to $f(x) = x^2 - 3$?

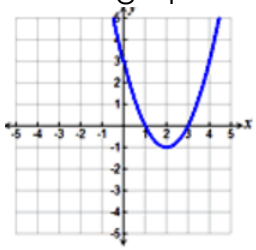
10. The function f(x) has been shifted 5 units to the right and 2 units up. Which of the following equations represents these changes?

A) f(x + 5) – 2 B) f(x – 5) + 2 C) f(x + 5) + 2 D) f(x – 5) – 2

11. Given the graph at the right of g(x). Which graph below depicts g(x + 2)?



A)



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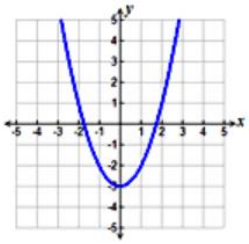

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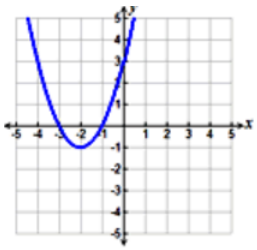
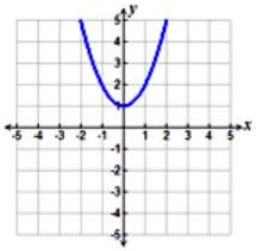


D)



12. The function f(x) is shown in the table at the right. Which of the following represents the value of h(3), given that h(x) = f(x) + 4?

X	Y
2	-12
3	-10
7	7
11	14
12	18

A) 7 B) – 6 C) 11 D) – 10

13. Which of the following statements describes the transformation indicated by $f(x) = x^2$ when it becomes $g(x) = -(x - 1)^2$?

A) Function f was translated horizontally 1 unit left
B) Function f was translated vertically 1 unit down and reflected over the x axis
C) Function f was translated horizontally 1 unit right and reflected over the x axis
D) Function f was translated vertically 1 unit up

Use the following information about f(x) and g(x) to answer 14 – 17. Given f(x) = 2x + 4. Function g(x) = f(x) + 6 .

14. What is the x intercept of f(x)?

A) -2 B) 2 C) 4 D) 6

15. What is the x intercept of g(x)?

A) -10 B) -8 C) -5 D) -2

16. What is the y intercept of f(x)?

A) -2 B) 2 C) 4 D) 6

17. What is the y intercept of g(x)?

A) 24 B) 10 C) 8 D) 6

18. Given a parabolic function $f(x) = x^2 - 4$. Function $k(x) = f(x) + 3$. What is the new equation of k(x)?

A) $k(x) = x^2 - 7$ B) $k(x) = x^2 + 7$ C) $k(x) = x^2 + 1$ D) $k(x) = x^2 - 1$

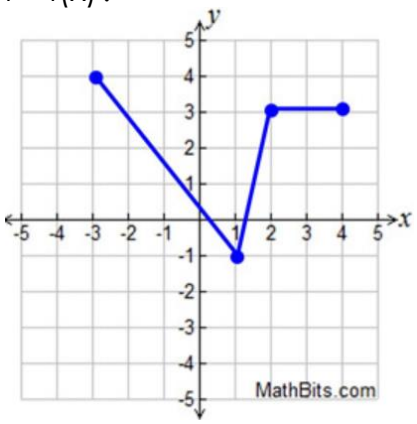
19. The minimum point on the graph of the function f(x) is $(-2, -4)$. What is the minimum point on the graph of the function $g(x) = f(x) + 7$?

A) $(-2, -11)$ B) $(5, 3)$ C) $(-2, 3)$ D) $(-5, -11)$

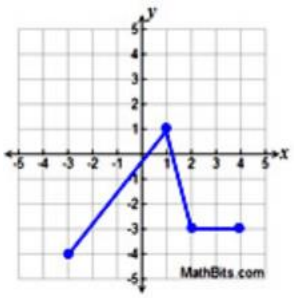
20. If the graph of the function $y = 3^x$ is reflected over the x axis, the equation of the reflection would be _____.

A) $y = 3^{-x}$ B) $y = x^3$ C) $y = -(3)^x$ D) $y = -x^3$

21. Given the graph f(x) shown at the right? Which graph would depict – f(x)?



A)



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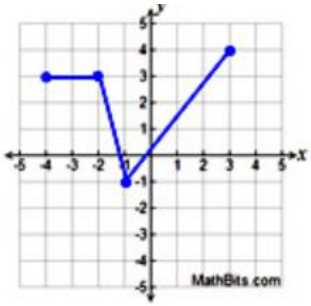

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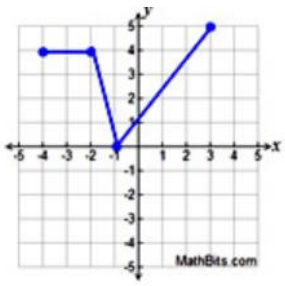

D)