FUNCTIONS 2 (dom, range, translations)

Name: _____ **Date:** _____

1. What is the domain of the function?

$$f(x) = 7 - \frac{3}{x-2}$$

A. all real numbers

B. all real numbers less than or equal to 7

C. all real numbers except 2

D. all real numbers except 7

2. If $f(x) = x^3$ is transformed into the graph of $h(x) = (x+4)^3 + 3$, which of the following describes the transformation?

F. Translation of 4 units to the right and 3 units up

G. Translation of 4 units to the left and 3 units up

H. Translation of 3 units to the right and 4 units up

J. Translation of 3 units to the left and 4 units up

3. Compared to its 'parent' function $f(x) = x^2$, which of these best describes the function $f(x) = -x^2 - 3$?

A. reflected about the y-axis and wider

B. reflected about the y-axis and narrower

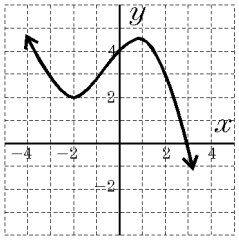
C. reflected about the x-axis and translated up

D. reflected about the x-axis and translated down

4. On the graph shown, what is $f(-2)$?

F. 4 G. 3 H. 2

J. 0 K. −2



5. The graph of $y = x^2$ is to be translated left 2 units and up 5 units. Write an equation to represent the image of the graph after the translation.

A. $y = (x-2)^2 + 5$ B. $y = (x+2)^2 + 5$

C. $y = -2x^2 + 5$ D. $y = 5x^2 - 2$

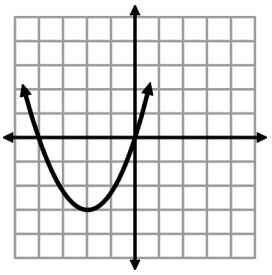
6. Which best describes the domain of the relation graphed?

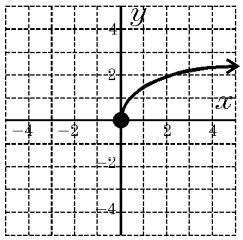
F. $\{-4, 0\}$

G. $-4 \le x \le 0$

H. $y \ge -3$

J. all real numbers



7. 

What is the domain of the function shown?

A. $x \ge 0$ B. $y \ge 0$

C. $x \le 0$ D. $y \le 0$

E. all real numbers

8. What are the domain and range of the function $y = 2(x+4)^2 + 1$?

F. D: $x \ge 4$; R: all real numbers

G. D: $x \le 4$; R: all real numbers

H. D: all real numbers; R: $y \le 1$

J. D: all real numbers; R: $y \ge 1$

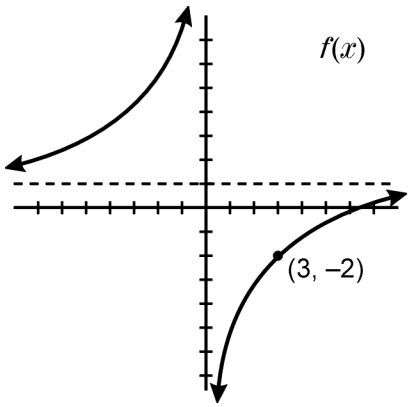
K. D: $x \le 4$; R: $y \le 1$

9. Determine the domain for the following function.

$f(x) = -\sqrt{x+3} + 4$

A. $[3, \infty)$ B. $[-3, \infty)$ C. $(-\infty, 4]$ D. $[4, \infty)$

10. What value(s) are not in the range of $f(x)$?



F. 1 G. 0 H. 3 J. –2

11. Which of the following is always true for all functions?

I. For every x there is only one y.

II. For every y there is only one x.

III. The domain is the set of real numbers.

A. I only B. II only

C. I and III only D. II and III only

12. Given the graph, describe the range.

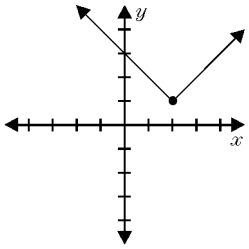
F. $x \geq 1$

G. $y \geq 1$

H. $x < 1$

J. $y > 1$

K. All Real Numbers



13. If $f(x) = (x + 1)^3$ is transformed into the graph of $f(x) = -(x + 1)^3$, which of the following describes the transformation?

A. Reflection across x-axis

B. Reflection across y-axis

C. Horizontal translation 1 unit to the left

D. Horizontal translation 1 unit down

14. Let $f(x) = \sqrt{x}$ and $g(x) = \sqrt{x} + 4$. Which of the following statements is true about the graphs of the functions?

F. $g(x)$ is $f(x)$ translated 4 units to the left

G. $g(x)$ is $f(x)$ translated 4 units to the right

H. $g(x)$ has the same domain as $f(x)$

J. $g(x)$ has the same range as $f(x)$

15. Given the graph, describe the domain.

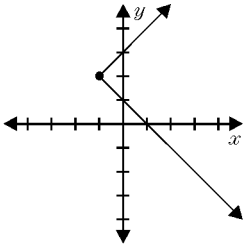
A. $x \geq -1$

B. $y \geq 2$

C. $y \geq -2$

D. $x \geq 1$

E. All Real Numbers



16. Given $y = -x^2$. If the function is shifted up 5 units, which equation describes the new function?

F. $f(x) = -x^2 - 5$ G. $f(x) = -(x + 5)^2$

H. $f(x) = -5x^2$ J. $f(x) = -x^2 + 5$

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

17. The graph of $y = ax^2$ is shifted up 3 units and right 5 units. Which equation represents the resulting graph?

A. $y = a(x - 5)^2 + 3$ B. $y = a(x + 5)^2 + 3$

C. $y = a(x - 3)^2 + 5$ D. $y = a(x + 3)^2 + 5$

18. Which does *not* represent y as a function of x?

F. $x = y^2 + 2$ G. $y = x^2 + 2$

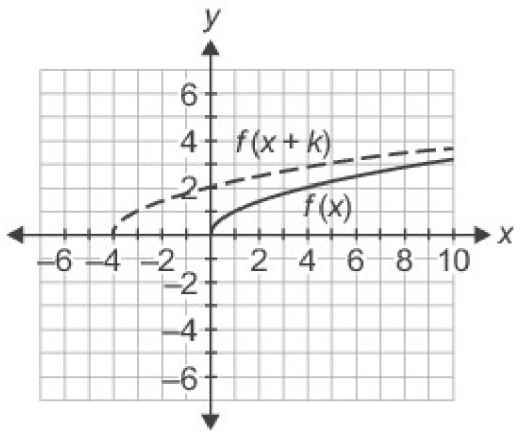
H. $x = y + 8$ J. $y = -x + 8$

19. Which equation represents the graph of $y = x^2$ translated 1 unit right and 2 units down?

A. $y = -(x - 1)^2 - 2$ B. $y = (x - 1)^2 - 2$

C. $y = -(x + 1)^2 + 2$ D. $y = (x + 1)^2 - 2$

20. The graphs of $f(x) = \sqrt{x}$ and $f(x + k) = \sqrt{x + k}$ are shown.



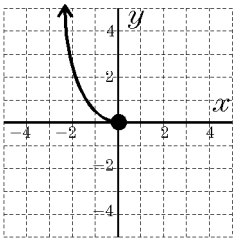
What is the value of k?

F. −16 G. −4 H. 4 J. 16

21. The graph of $f(x) = x^2 + 3$ is translated to produce the graph of $g(x) = (x + 2)^2 + 3$. In which direction was the graph of f translated?

A. up B. down C. left D. right

22. Find the range of the function below.



F. $x \geq 0$ G. $y \geq 0$

H. $x \leq 0$ J. $y \leq 0$

K. all real numbers

23. Which of the following *most* accurately describes the translation of the graph $y = (x + 3)^2 - 2$ to the graph of $y = (x - 2)^2 + 2$?

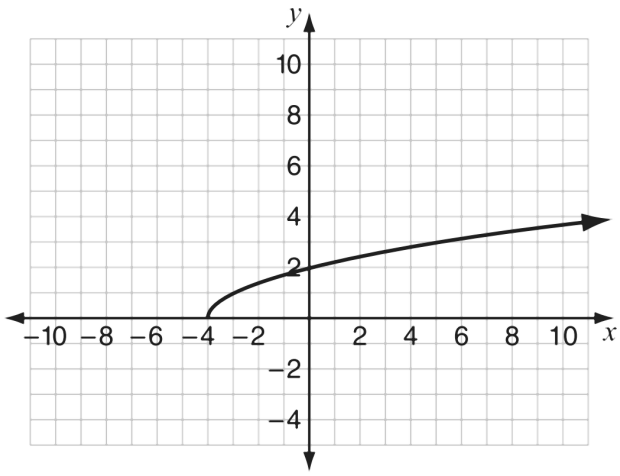
A. up 4 and 5 to the right

B. down 2 and 2 to the right

C. down 2 and 3 to the left

D. up 4 and 2 to the left

24. Look at this graph of a function. (y is a function of x.)



What is the domain of the function?

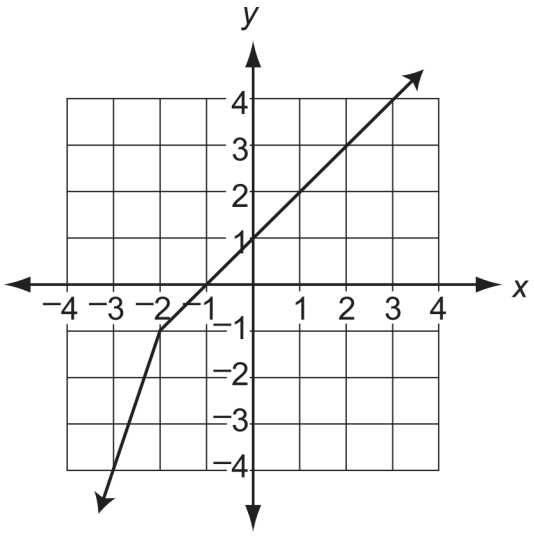
F. all real numbers

G. all real numbers except −4

H. all real numbers greater than or equal to 0

J. all real numbers greater than or equal to −4

25. Use the graph of the function below to answer the question.



Which description of the function is true?

A. The function is linear and always increasing.

B. The function is nonlinear and always increasing.

C. The function is decreasing from negative infinity to −1 and increasing from −1 to infinity.

D. The function is decreasing from negative infinity to −2 and increasing from −2 to infinity.

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FUNCTIONS 2 (dom, range, translations) 3/2/2018

1.
Answer: C
Objective: [F.IF.1]

2.
Answer: G
Objective: [L.06A]

3.
Answer: D
Objective: [A.07C]

4.
Answer: H
Objective: [A2.F.1.1]

5.
Answer: B
Objective: [A.07C]

6.
Answer: J
Objective: [F.IF.5]

7.
Answer: A
Objective: [F.IF.5]

8.
Answer: J
Objective: [A2.F.1.1]

9.
Answer: B
Objective: [A2.F.1.1]

10.
Answer: F
Objective: [F.IF.5]

11.
Answer: A
Objective: [F.IF.1]

12.
Answer: G
Objective: [F.IF.5]

13.
Answer: A
Objective: [L.06A]

14.
Answer: H
Objective: [L.04C]

15.
Answer: D
Objective: [F.IF.5]

16.
Answer: J
Objective: [A.07C]

17.
Answer: A

18.
Answer: F

19.
Answer: B

20.
Answer: H

21.
Answer: C

22.
Answer: G
Objective: L.07I

23.
Answer: A

24.
Answer: J

25.
Answer: B