



Victor Valley Union High School District

Test Booklet: Function Unit

Name: _____

Date: _____



1. Find the range of the function:

$$y = \sqrt{x + 1}$$

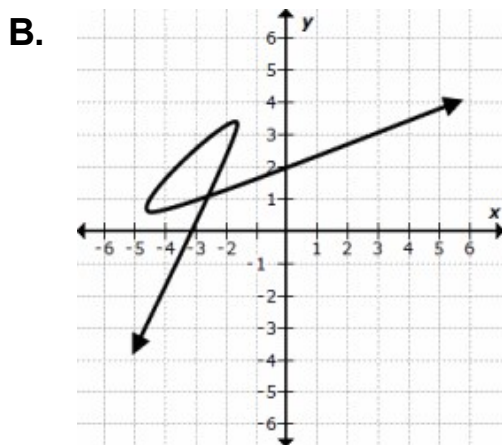
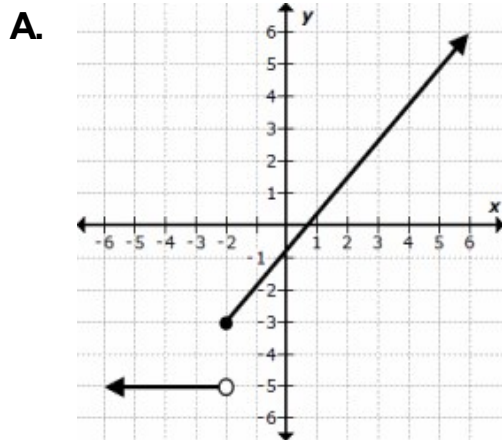
- A. all real numbers greater than or equal to 1
- B. all real numbers greater than or equal to 0
- C. all real numbers greater than 1
- D. all real numbers greater than -1

2. What is the domain of the given relation?

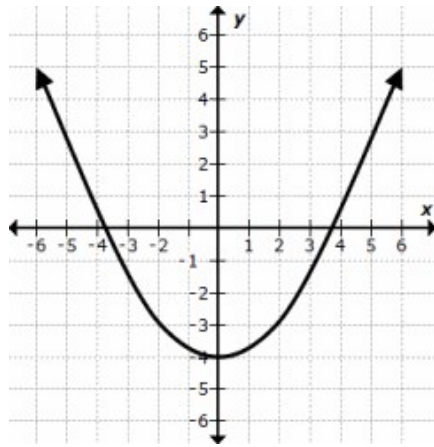
$$\{(0, -1), (2, -3), (3, -2)\}$$

- A. $\{0, 2, 3\}$
- B. $\{-3, -2, -1\}$
- C. $\{-3, -2, 3\}$
- D. $\{-1, -1, 1\}$

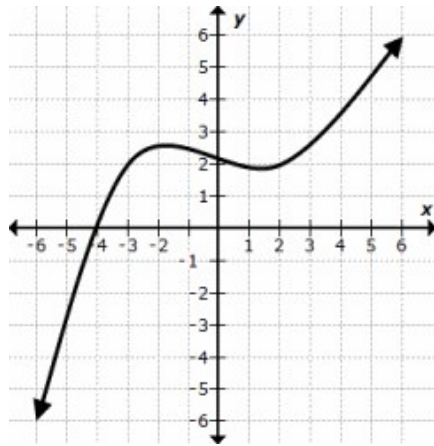
3. Which of the following graphs represents a relation that is *not* a function?



C.



D.



4. Find $g^{-1}(x)$ when $g(x) = \frac{3}{5}x - 9$.

A. $\frac{-3}{5}x + 9$

B. $\frac{5}{3}x + 15$

C. $\frac{5}{3x} - \frac{1}{9}$

D. $\frac{5}{3}x + 9$

5. Given:

$$f(x) = x^2 + 2$$

$$g(x) = 2x$$

Which of the following expressions represents $(f \cdot g)(x)$?

A. $4x^2 + 2$

B. $2x^2 + 4$

C. $2x^3 + 4x$

D. $x^2 + 4x$

8. Suppose $f(x) = 3x^2 - 2x$.

Find $f(-4)$.

A. -56

B. -40

C. 40

D. 56

6. Which of the following expressions represents $\frac{f}{g}(x)$?

Given:

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

$$g(x) = x - 1$$

A. x

B. $x + 1$

C. $x - 1$

D. $\frac{1}{x - 1}$

7. Given: $f(x) = 2x + 6$

Which of the following is the inverse of $f(x)$?

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

B. $f^{-1}(x) = x - 7$

C. $f^{-1}(x) = \frac{1}{2}x - 3$

D. $f^{-1}(x) = -2x - 6$

9. Which of the following has a range of 'all real numbers'?

A. $f(x) = x^2$ only

B. $f(x) = x^3$ only

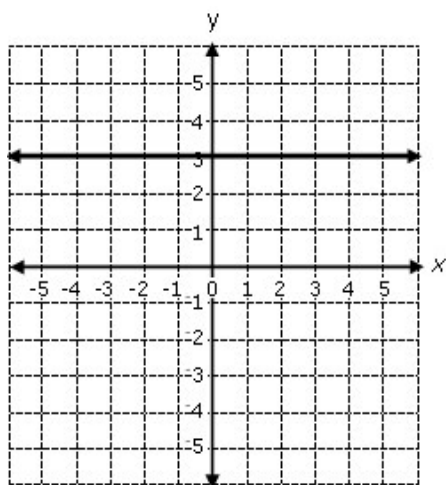
C. $f(x) = x^4$ only

D. All of these

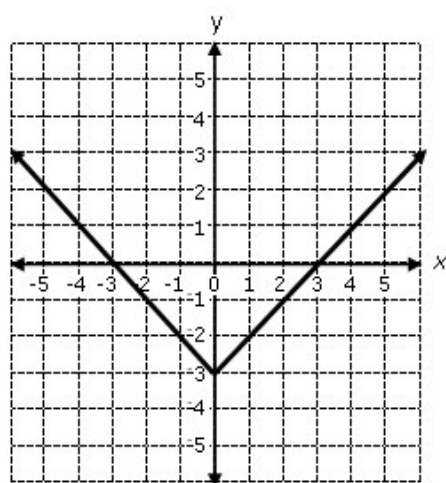
10. Each of the four graphs below represents a function. Which function has

an inverse that is also a function?

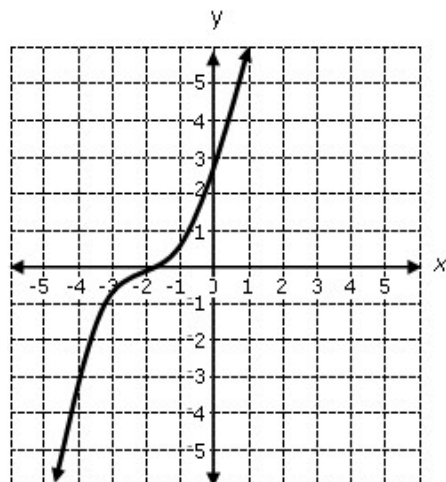
A.



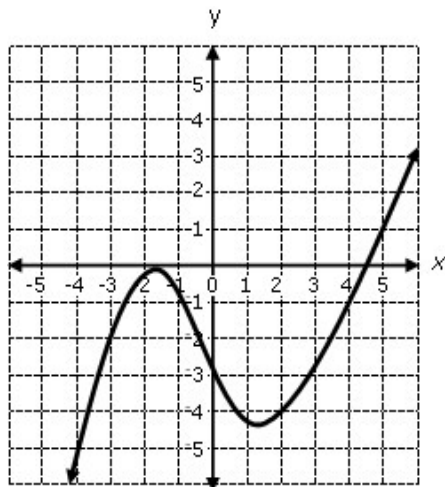
B.



C.



D.



11. Which expression represents $f^{-1}(x)$ if $f(x) = 11 - 10x$?

A. $-11 + 10x$

B. $-11 + \frac{1}{10}x$

C. $11 + 10x$

D. $\frac{11 - x}{10}$

12. If $f(x) = 4x - 11$, what is the value of $f(5)$?

A. $20x - 55$

B. 34

C. 9

D. 4

13. If $f(x) = 2x^2 - 3x$, what is the value of $f(5)$?

A. $10x - 15$

B. -1 or $\frac{5}{2}$

C. 35

D. 85

14. If $f(x) = 3$, what is the value of $f(-7)$?

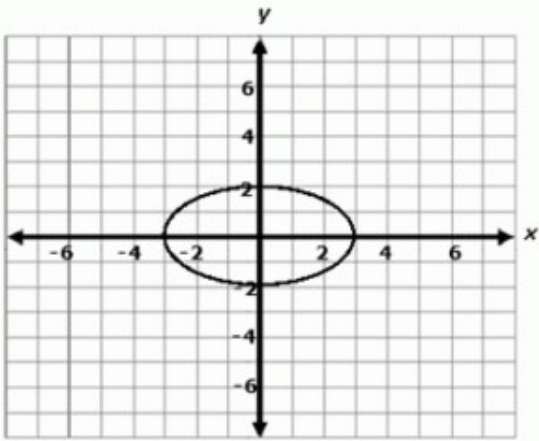
A. $x - 10$

B. 3

C. -4

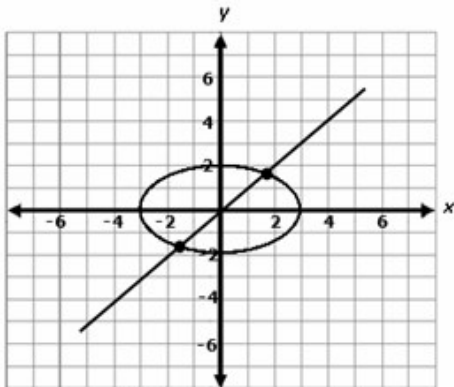
D. -21

15. Leah plotted an equation on a coordinate grid and produced this graph:

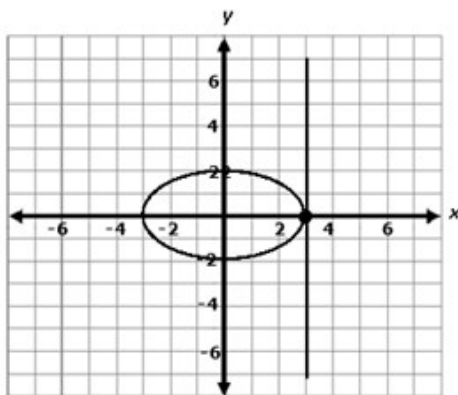


Which of the following shows a line test correctly used to show that Leah's equation does not define a function of x ?

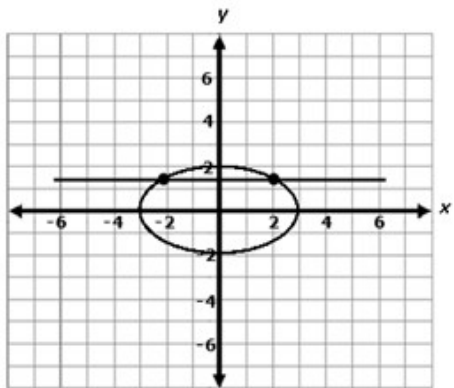
A.



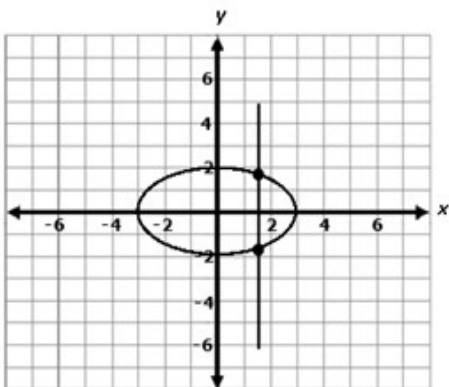
B.



C.



D.



16. If $f(x) = x^2 + 2x - 5$ and $g(x) = 2x + 4$, what is $(f \cdot g)(x)$?

- A. $x^2 - 9$
- B. $x^2 + 4x - 1$
- C. $2x^3 + 8x^2 - 2x - 20$
- D. $6x^2 + 2x - 20$

18. Let $f(x) = \frac{x - 2}{6}$.

Part A:

Write an expression that represents the inverse of the function $f(x)$.

Part B:

Explain how you determined your answer.

17. If $f(x) = 4x^3 + 3x^2 - 5x + 20$ and $g(x) = 9x^3 - 4x^2 + 10x - 55$, what is $(g - f)(x)$?

- A. $13x^3 - x^2 + 5x - 35$
- B. $5x^3 + x^2 + 5x + 35$
- C. $-5x^3 + 7x^2 - 15x + 75$
- D. $5x^3 - 7x^2 + 15x - 75$

19. Suppose $f(x) = 5x - 3$, $g(x) = x^2 + 10$, and $h(x) = -2x + 7$. Which of these composite functions is/are correct? Select three that apply.

- A. $f(g(x)) = 25x^2 - 30x + 19$
- B. $f(h(x)) = -10x + 32$
- C. $g(h(x)) = 4x^2 - 28x + 59$
- D. $h(f(x)) = -10x + 13$

20. Given:

$$f(x) = \sqrt{x}$$

$$g(x) = x^2$$

Which of the following statements is true?

- A.** $f(x)$ is the inverse of $g(x)$.
- B.** $g(x)$ is the inverse of $f(x)$.
- C.** $g(x)$ and $f(x)$ are both inverses of each other.
- D.** There is no relationship between $g(x)$ and $f(x)$.

21. Let $f(x) = \frac{x}{2} + 9$ and $g(x) = 2x -$

18.

Part A:

Determine $f(g(x))$ and $g(f(x))$.

Show all of your work.

Part B:

Based on your response to Part A, are $f(x)$ and $g(x)$ inverse functions? Explain your reasoning.