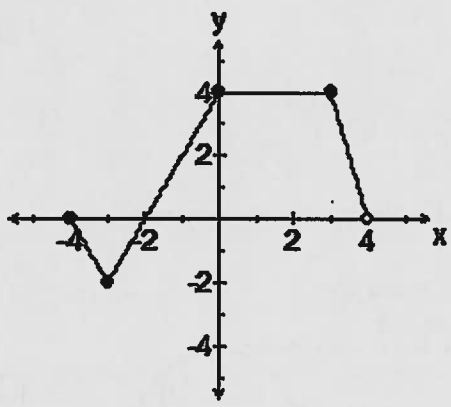


1. The equation $M = 4.4n$, relates the number of quarters, n , to its mass, M , in grams. What is the independent variable? 1. E

- A). The mass of the quarters.
- B). The value of the quarters.
- C). The number of quarters.
- D). Each quarter weighs 4.4 grams.

2. What is the domain of the following relation? 2. B

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



$-4 \leq x < 4$

3 After examining the table of values below, which statement is a false

x	-2	0	1	2	4	5
y	8	6	5	4	1	0

statement?

Slope:

- [1] The domain is $\{-2, 0, 1, 2, 4, 5\}$.
- [2] The average rate of change is -2 .
- [3] The range is $\{0, 1, 4, 5, 6, 8\}$.
- [4] This relation is a function.

4. Let $f(x) = 2x^2 - 4x$ and $g(x) = \sqrt{x}$. Determine $f(g(4))$. 4. B

- a. 4
- b. 0
- c. 32
- d. 18

$$f(2) = 2(2)^2 - 4(2)$$

$$2 \cdot 4 - 8$$

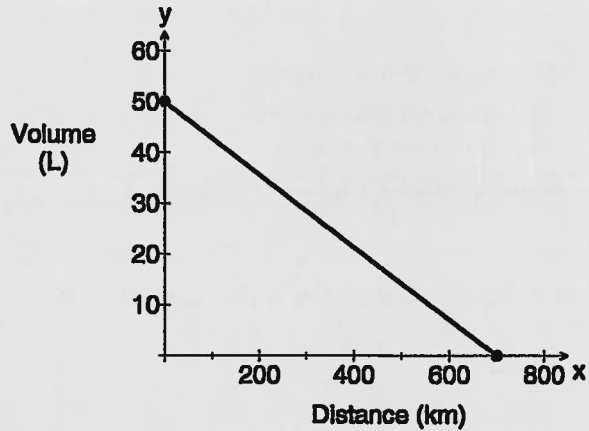
$$8 - 8 = 0$$

5. The graph below shows the relationship between the amount of gasoline remaining in a 50 L tank and the distance driven. What does the x-intercept represent in this situation?

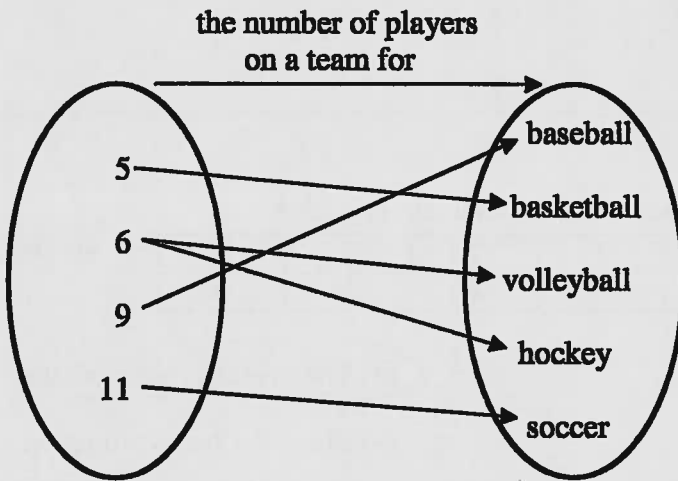
5. C

- A). Fuel capacity of the gasoline tank.
- B). Total distance travelled during a long trip.
- C). Total distance driven until the car is out of gas.**
- D). Number of kilometers driven per liter of gasoline.

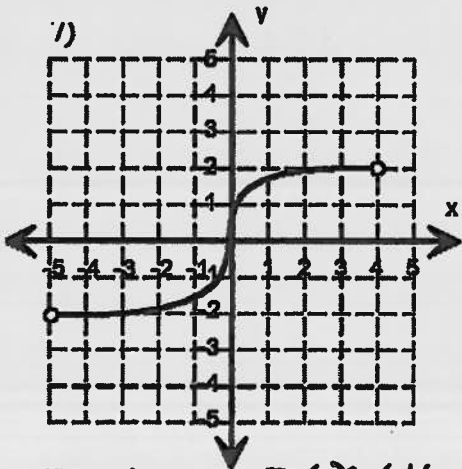
Gasoline Remaining vs Distance Driven



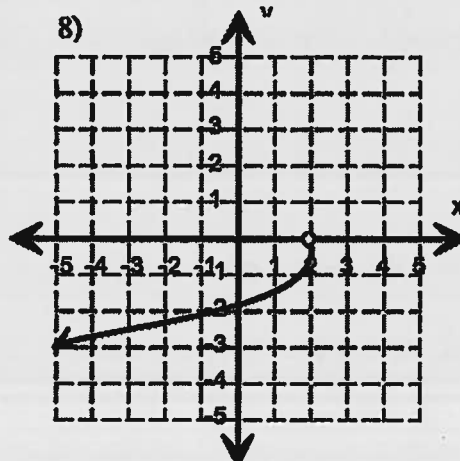
6. Is this relation a function? Explain why or why not.



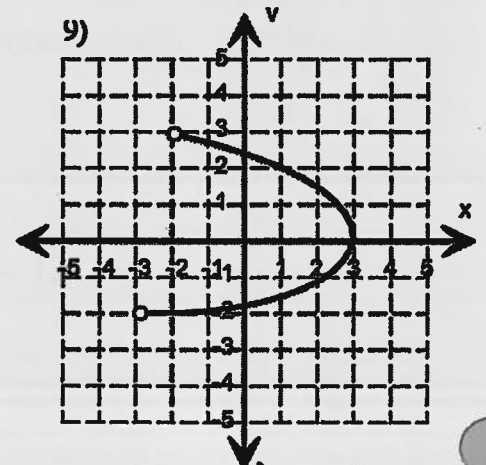
No, Input "6" has two outputs



Domain: $-5 < x < 4$
Range: $-2 < y < 2$

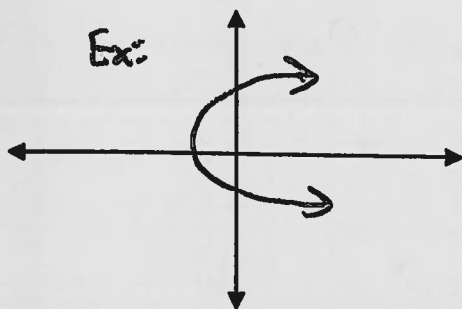


Domain: $x < 2$
Range: $y < 0$



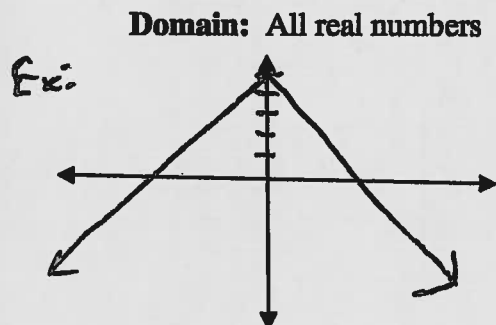
Domain: $-3 < x < 3$
Range: $-2 < y < 3$

10. Draw a graph that is not a function. (Explain why it is not a function)

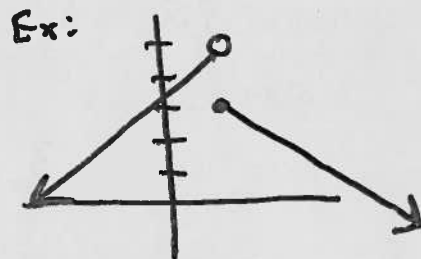


Doesn't pass the VLT test

11. Draw a graph that is a function with the following domain and range.



Domain: Real Number
Range: $y < 5$



12. let $f(x) = -x + 9$, $g(x) = -5x + 2$, and $h(x) = x^2 - 5x + 3$ Perform the indicated operation.

a. $f(-4) = \underline{13}$

b. $h(-4) = \underline{39}$

$16 + 20 + 3$

c. $h(-4w) = \underline{16w^2 + 20w + 3}$

d. $g(a+3) = \underline{-5a - 13}$
 $-5(a+3) + 2 = -5a - 15 + 2$

e. $\frac{f(x)}{g(x)} = \frac{-x+9}{-5x+2}$ Domain: $x \neq \frac{2}{5}$

f. $\frac{g(x)}{f(x)} = \frac{-5x+2}{-x+9}$ Domain: $x \neq 9$

g. $g(h(2)) = \underline{17}$
 $h(2) = 4 - 10 + 3 = -3$
 $g(-3) = 15 + 2$

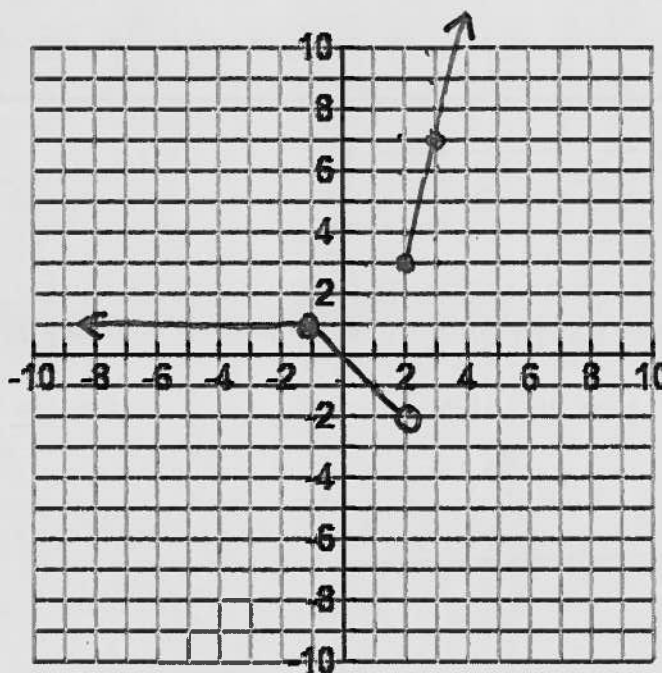
h. $h(f(2)) = \underline{17}$
 $f(2) = 7$ $h(7) = 49 - 35 + 3$

i. $g(f(x)) = \underline{5x - 43}$
 $-5(-x+9) + 2$
 $5x - 45 + 2$

j. $g(g(x)) = \underline{25x - 8}$
 $-5(-5x+2) + 2$
 $25x - 10 + 2$

13. Graph the piecewise function

$$f(x) = \begin{cases} 4x-5, & x \geq 2 \\ -x, & -1 < x < 2 \\ 1, & x \leq -1 \end{cases}$$



Evaluate the following:

$$f(1) = \underline{-1}$$

$$f(20) = \underline{75}$$

$$f(-1000) = \underline{1}$$

$$\text{If } f(x) = 7 \text{ then } x = \underline{3}$$

14. Perform the indicated operation and simplify.

a. $(w^3 + 4w^2 - 10w + 7) + (6w^3 + 5w + 10)$

$$\boxed{7w^3 + 4w^2 - 5w + 17}$$

b. $(2x^4 + 9x - 7) + (x^4 + 6x + 5)$

$$\boxed{3x^4 + 15x - 2}$$

c. $(x-2)(x^2 - 3x + 4)$

$$x^3 - 3x^2 + 4x - 2x^2 + 6x - 8$$

$$\boxed{x^3 - 5x^2 + 10x - 8}$$

d. $(3x^2 + 2)^2$

$$\boxed{9x^4 + 12x^2 + 4}$$

15. Write an equation for the parent function $y = x^2$ being translated 4 units left and being reflected over the x-axis.

$$\boxed{y = -(x+4)^2}$$

In 16 and 17:

- identify the parent function
- describe any transformations (reflection, scale, translation)
- write the rule

16. $y = 2|x| - 5$

a) $y = |x|$

b) Vertical stretch

Down 5

c) $(x, y) \rightarrow (x, 2y - 5)$

17. $y = -(x - 2)^2 + 10$

a) $y = x^2$

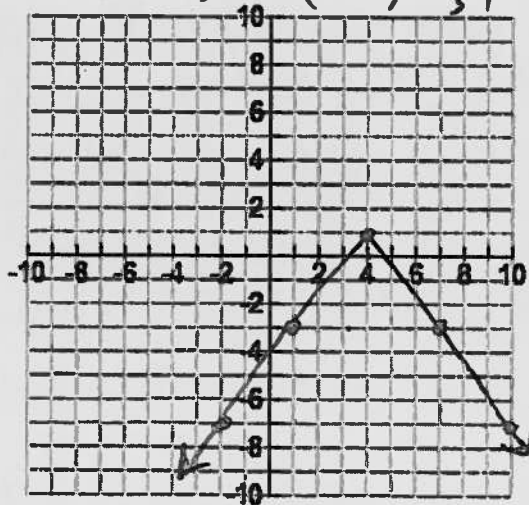
b) Reflect over x-axis

Right 2 up 10

c) $(x, y) \rightarrow (x + 2, -y + 10)$

18. Graph $y = -\frac{4}{3}|x - 4| + 1$

rule: $(x, y) \rightarrow (x + 4, -\frac{4}{3}y + 1)$



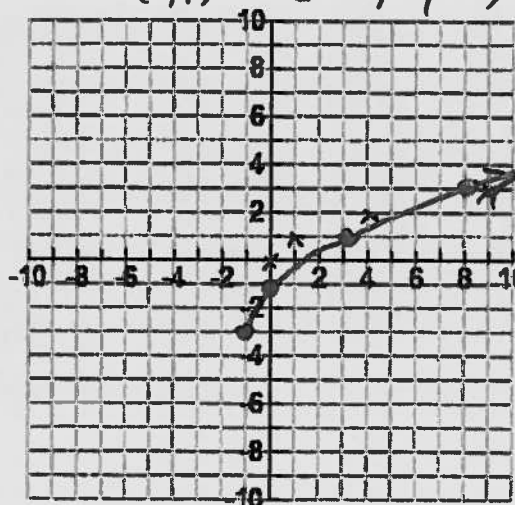
Domain: All Real's

Range: $y \leq 1$

19. Graph $y = 2\sqrt{x + 1} - 3$

Rule: $(x, y) \rightarrow (x - 1, 2y - 3)$

$(x, y) \rightarrow (x - 1, 2y - 3)$



$(x, y) \rightarrow (x - 1, 2y - 3)$

$(0, 0) \rightarrow (-1, -3)$

$(1, 1) \rightarrow (0, -1)$

$(4, 2) \rightarrow (3, 1)$

$(9, 3) \rightarrow (8, 3)$

Domain: $x \geq -1$

Range: $y \geq -3$

6-8

1-1-8

(10/1/8) (10/1/8)

(10/1/8) (10/1/8)

1-1-8

1-1-8

1-1-8