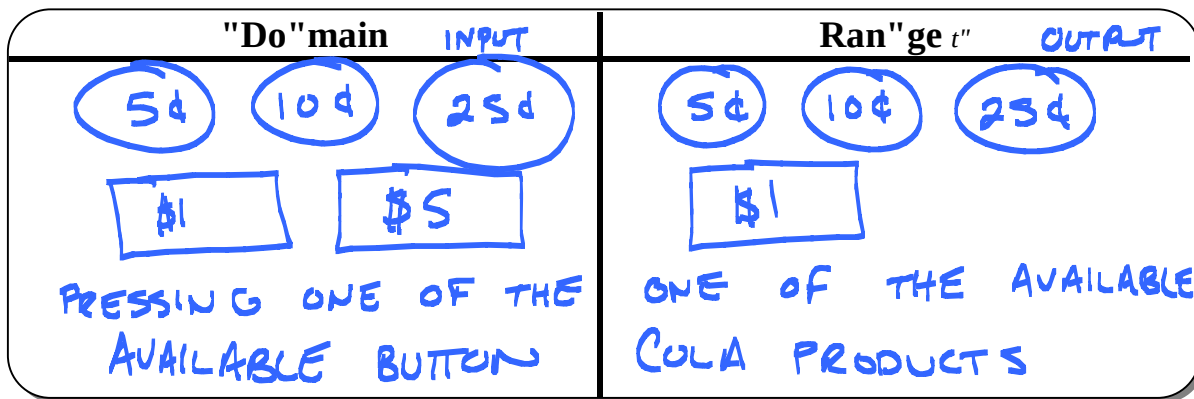


A coke machine is a good example of a relation that is a **function**. In the machine above assume the price for a soft drink is listed at \$1.30 and the top button shows a picture of a 16 oz Coca Cola bottle.

1. If you were to put 2 dollar bills into the coke machine and press the top button what would you get in return?

16 OZ COCA COLA, 25¢ 25¢ 10¢ 10¢

2. If your repeated the action in step # 1 what would happen? And again?

THE SAME OUTPUT WOULD DO THE SAME
16 OZ COCA COLA, 25¢ 25¢ 10¢ 10¢

3. What would happen if you put in 8 quarters and pushed the top button? (Remember that is a different input)

16 OZ COCA COLA, 25¢ 25¢ 10¢ 10¢

4. **ORDERED PAIRS:** Which of the sets of ordered pairs could be considered a function? List the domain and range if it is a function.

a. $\{(3,5), (2,6), (-5,3), (-7,1), (2,1)\}$

b. $\{(-2,1), (3,2), (5,2), (-6,5), (-2,1)\}$

c. $\{(7,2), (5,8), (3,1), (2,9), (-5,7)\}$

circle one:

Function **Not a Function**

Domain: _____

Range: _____

circle one:

Function Not a Function

Domain: -6, -2, 3, 5

Range: 1, 2, 5

circle one:

Function Not a Function

Domain: -5, 2, 3, 5, 7

Range: 1, 2, 7, 8, 9

5. **TABLES:** Which of the sets of ordered pairs in each table could be considered a function? List the domain and range if it is a function.

a.

Input	-2	0	2	4	6
Output	0.25	1	4	16	64

b.

x	2	0	2	4	6
y	4	-2	4	3	4

c.

x	y
1	4
2	3
1	4
2	2
3	5

circle one:

Function Not a Function

Domain: -2, 0, 2, 4, 6

Range: 0.25, 1, 4, 16, 64

circle one:

Function Not a Function

Domain: 0, 2, 4, 6

Range: -2, 3, 4

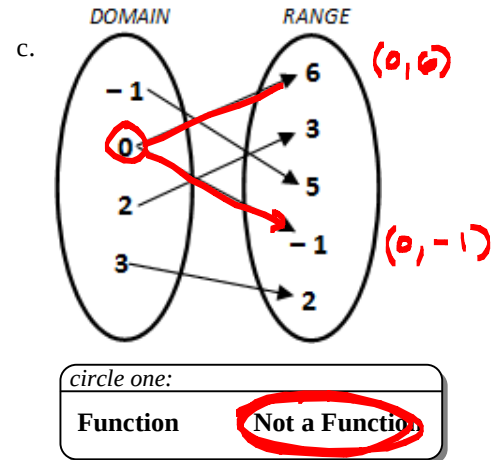
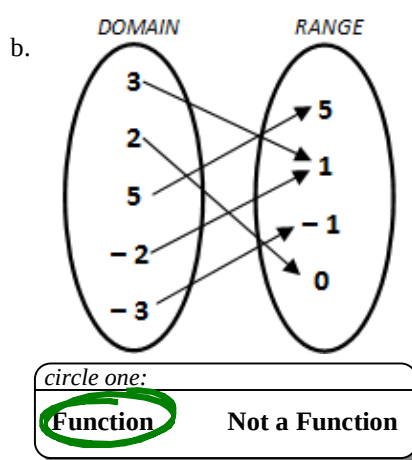
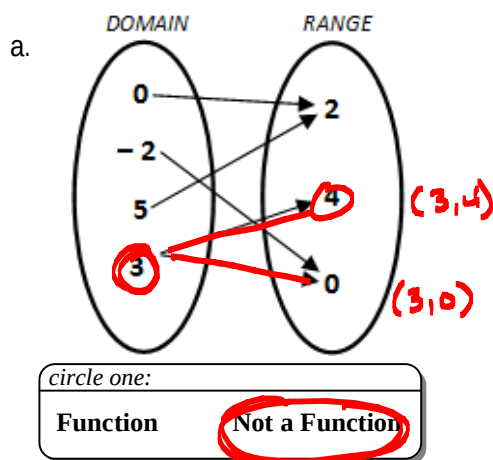
circle one:

Function **Not a Function**

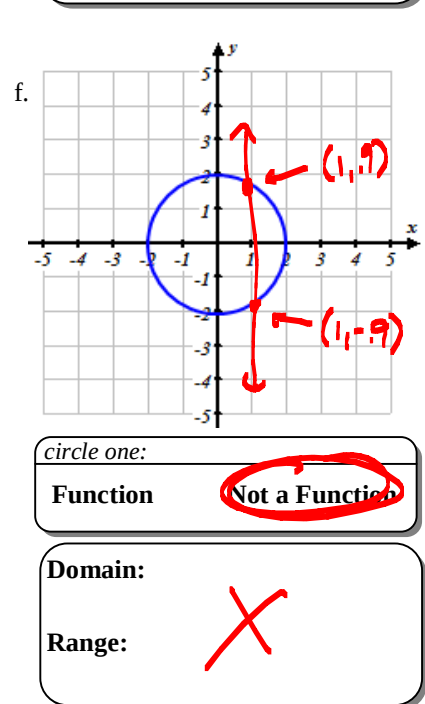
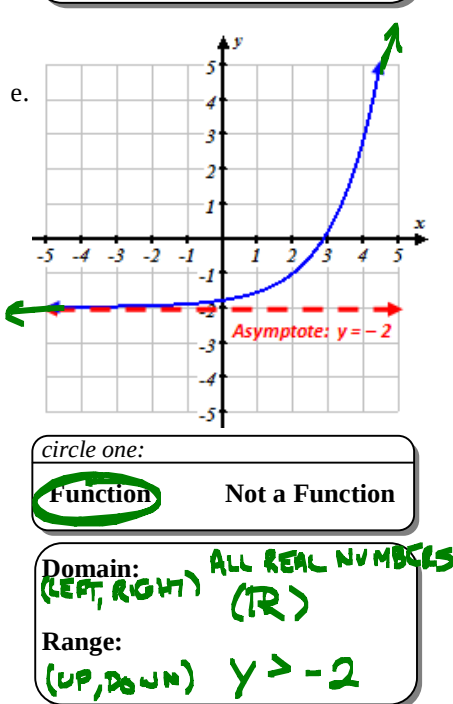
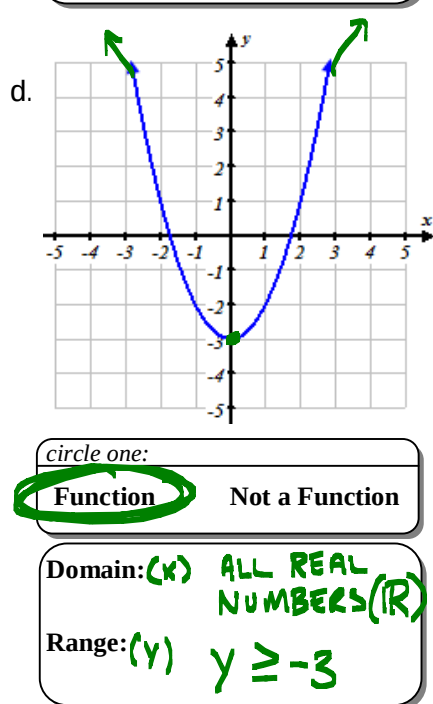
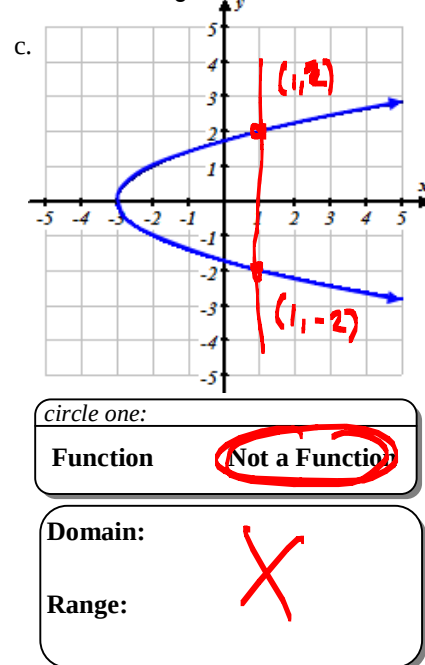
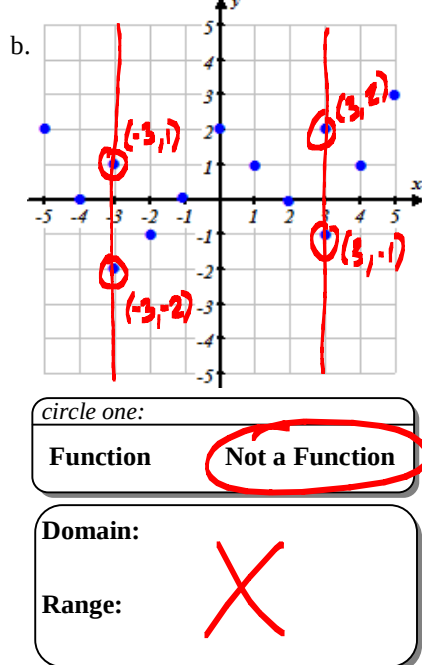
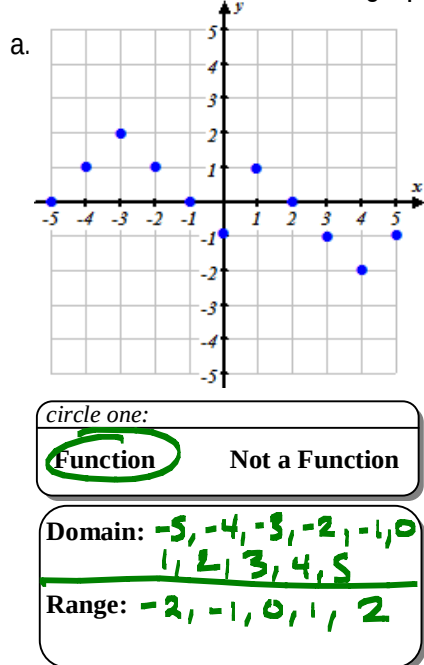
Domain: _____

Range: _____

6. **MAPPINGS:** Which of the mappings could be considered a function?



7. **GRAPHS:** Which of the graphs could be considered a function? List the domain and range if it is a function.



8. **SITUATIONAL EXAMPLES:** Which of the situations could be considered a function?

List the domain and range if it is a function.

(MATT, 2) (MATT, 4)

- a. A school administrator is using a database program called SASI. The administrator types a student number in the top box and the program returns the number of missed days in the bottom box. Each student has a unique ID number and the maximum number of absences any student has is 12 days.

circle one:

Function

Not a Function

Domain: ANY VALID STUDENT ID NUMBER

Range: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

- b. A teacher starting her first day of class tells the class that she will call out their first name and then the student is to respond with the total number of brothers and sisters they have. In the class there are 2 different students named Matt. The first student named Matt has 2 siblings the other has 4 siblings.

circle one:

Function

Not a Function

Domain:

Range:

- c. The Yellow Taxi Cab Company in a city charges \$3.00 as soon as you get in the cab and then an additional \$0.50 for each mile they drive their customers. They are limited to driving a maximum distance of 20 miles

$$f(x) = 3 + 0.50x$$

$$f(0) = 3 + 0.5(0) = 3$$

$$f(20) = 3 + 0.5(20) = 13$$

circle one:

Function

Not a Function

Domain: $0 \leq x \leq 20$

Range: $3 \leq y \leq 13$

9. Which of the equations could be written such that **y is a function of x**?

Circle each equation that could be written such that y is a function of x.

a. $y = 3x + 1$

FUNCTION ✓

~~$y^2 = x^2$~~

FAILS VERTICAL LINE TEST

~~$y = \pm 2^x$~~

FAILS VERTICAL LINE TEST

d. $y^3 = x + 1$

FUNCTION ✓

~~$y^4 + y = x^2$~~

FAILS VERTICAL LINE TEST

Y WOULD NOT BE A FUNCTION OF X IF:

- Y IS RAISED TO AN EVEN POWER
- $\pm$ WITH AN X
- IF Y IS IN ABSOLUTE VALUE BRACKETS

10. **FUNCTION NOTATION.** Given the function $f(x) = 3x + 2$, determine the following:

a. $f(3)$

$$f(x) = 3x + 2$$

$$f(3) = 3(3) + 2$$

$$= 9 + 2$$

$$= \boxed{11} \checkmark$$

b. $f(t + 1)$

$$f(x) = 3x + 2$$

$$f(t+1) = 3(t+1) + 2$$

$$= 3t + 3 + 2$$

$$= \boxed{3t + 5} \checkmark$$

c. What is x if $f(x) = 17$?

$$f(x) = 3x + 2$$

$$17 = 3x + 2$$

$$\frac{15}{3} = \frac{3x}{3}$$

$$\boxed{5 = x} \checkmark$$

11. **FUNCTION NOTATION.** Given the function $d(x) = x^2 + 3^x$, determine the following:

a. $d(2)$

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

$$d(2) = (2)^2 + 3^{(2)}$$

$$= 4 + 9$$

$$= \boxed{13}$$

$$\begin{matrix} 2 \times x \\ x^2 + 3^x \end{matrix}$$

$$\begin{matrix} 2 \\ 13 \end{matrix}$$

b. $d(0)$

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

$$d(0) = (0)^2 + 3^0$$

$$= 0 + 1$$

$$= \boxed{1}$$

$$\begin{matrix} 0 \times x \\ x^2 + 3^x \end{matrix}$$

$$\begin{matrix} 0 \\ 1 \end{matrix}$$

12. **FUNCTION NOTATION.** Given the function

x	-2	0	2	4	6
g(x)	4	-2	3	6	4

determine the following:

a. $g(0) = -2$

$x=0$ IS INPUT

FIND WHERE $x=0$ IN THE TABLE

b. $g(4) = 6$

$x=4$ IS THE INPUT

FIND WHERE $x=4$ IN THE TABLE

c. What is x if $g(x) = 4$?

$x = -2 \text{ or } 6$

THE OUTPUT WAS 4

FIND IN THE TABLE WHERE $g(x) = 4$

13. **FUNCTION NOTATION.** Given the graph of the function $h(x)$ determine the following:

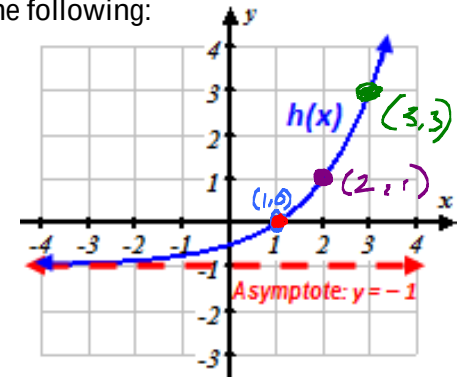
a. $h(1) = 0$

$x=1$ IS THE INPUT

FIND WHERE $x=1$ IN THE GRAPH

c. What is x if $h(x) = 1$?

THE OUTPUT WAS $y=1 \rightarrow$ THE INPUT MUST HAVE BEEN $x=2$



14. **FUNCTION NOTATION.** Given the function $b(x)$: $(2, 3)$, $(1, 4)$, $(4, 2)$, $(5, 3)$, $(3, 0)$, determine the following:

a. $b(2) = 3$

$x=2$ IS THE INPUT

b. $b(3) = 0$

$x=3$ IS THE INPUT

c. What is x if $b(x) = 3$?

THE OUTPUT WAS $y=3$

THEN $x = 2 \text{ or } 5$

15. **FUNCTION NOTATION.** Given $f(8) = (8)^2 + 2(8)$, determine a possible equation for $f(x)$

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

16. **FUNCTION NOTATION.** Given the partial set of values for the function $h(x)$, determine a possible equation for $h(x)$.

x	-2	0	1	2	3
h(x)	-6	0	3	6	9

SLOPE

$\downarrow$

$\frac{3}{1}$

$\frac{3}{1}$

$\frac{3}{1}$

$\frac{3}{1}$

$\frac{3}{1}$

$\frac{3}{1}$

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$\frac{3}{1}$

CONSISTENT RATE OF CHANGE SUGGESTS A LINEAR FUNCTION

x	0	1	2	3	4
p(x)	2	3	4	5	6

17. **FUNCTION NOTATION.** Given the partial set of values for the function $p(x)$, determine a possible equation for $p(x)$.

$p(x) = x + 2$

$(0, 2)$ $(1, 3)$

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{3 - 2}{1 - 0} = \frac{1}{1} = 1$

$y = mx + b$

TEST $(0, 2)$

$y = 1x + b$

$(2) = 1(0) + b$

$2 = 0 + b$

$2 = b$

$y = 1x + 2$

$p(x) = 1x + 2$