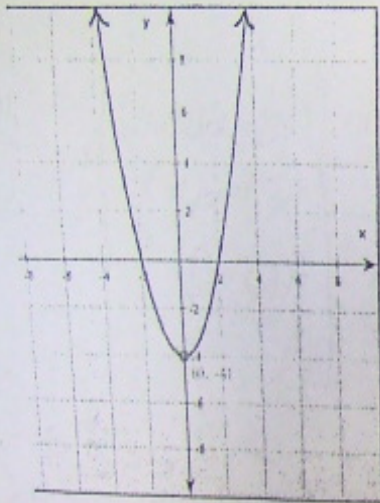


NRF

Relations Check Up

1. Determine the Domain and Range for each of the following: (The graphs count by twos.)

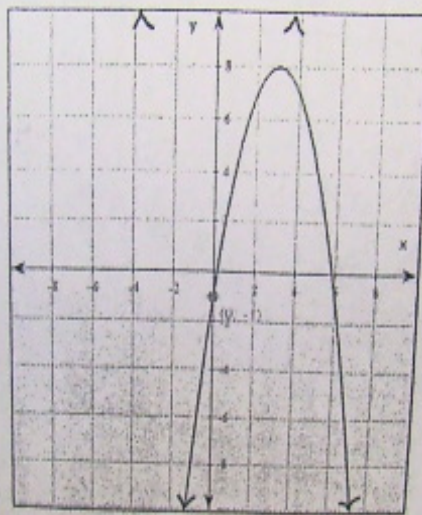


Domain:

$\{x | x \in \mathbb{R}\}$

Range:

$\{y | y \geq -4\}$

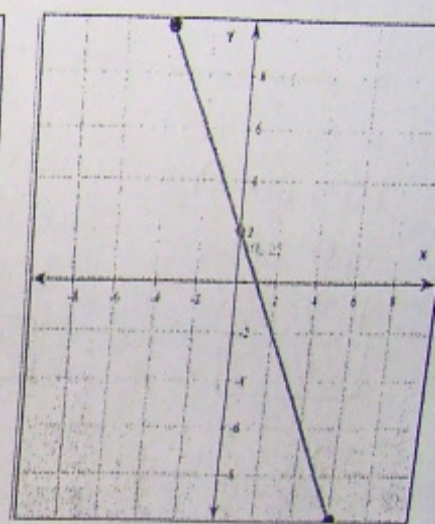


$\{x | -\infty \leq x \leq \infty, x \in \mathbb{R}\}$

$\{x | x \in \mathbb{R}\}$

$\{y | -\infty \leq y \leq 8, y \in \mathbb{R}\}$

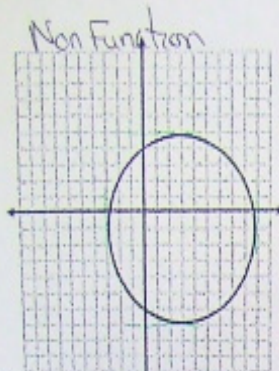
$\{y | y \leq 8, y \in \mathbb{R}\}$



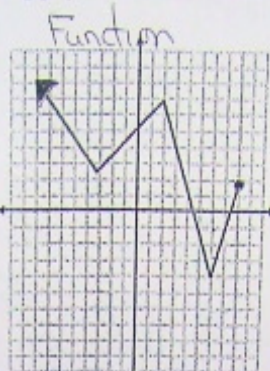
$\{x | -4 \leq x \leq 6, x \in \mathbb{R}\}$

$\{y | -10 \leq y \leq 10, y \in \mathbb{R}\}$

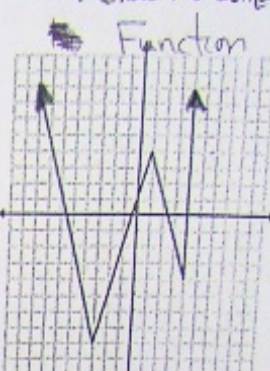
2. Determine if the following graphs are functions or non-functions. State the domain & range.



D:  $\{x \mid -3 \leq x \leq 3, x \in \mathbb{R}\}$   
 R:  $\{y \mid -7 \leq y \leq 7, y \in \mathbb{R}\}$

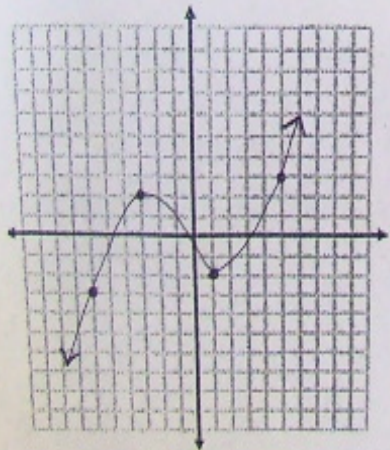


D:  $\{x \mid x \leq 8, x \in \mathbb{R}\}$   
 R:  $\{y \mid y \geq -4, y \in \mathbb{R}\}$

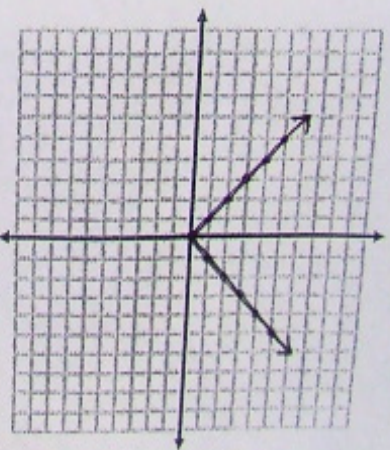


D:  $\{x \mid x \in \mathbb{R}\}$   
 R:  $\{y \mid y \geq -8, y \in \mathbb{R}\}$

3. Draw a graph to represent a function or non-function.



FUNCTION



NON-FUNCTION

4. Determine the value of the following using function notation.

$$w(x) = 2x - 5 \quad h(x) = 2(x - 8) \quad a(x) = \frac{5x - 10}{2} \quad t(x) = 6(x + 11)$$

a)  $h(7)$

$$h(x) = 2(x - 8)$$

$$h(7) = 2(7 - 8)$$

$$h(7) = 2(-1)$$

$$\boxed{h(7) = -2}$$

b)  $w(15)$

$$w(x) = 2x - 5$$

$$w(15) = 2(15) - 5$$

$$w(15) = 30 - 5$$

$$\boxed{w(15) = 25}$$

c)  $a(4) + t(5)$

$$a(4) = \frac{5(4) - 10}{2}$$

$$a(4) = \frac{20 - 10}{2}$$

$$a(4) = \frac{10}{2}$$

$$a(4) = \underline{5}$$

$$t(5) = 6(5 + 11)$$

$$t(5) = 6(16)$$

$$t(5) = \underline{96}$$

$$5 + 96$$

$$= \boxed{101}$$

d)  $w(h(2))$

$$\textcircled{1} h(2) = 2(2 - 8)$$

$$h(2) = 2(-6)$$

$$h(2) = -12$$

$$\textcircled{2} w(-12) = 2(-12) - 5$$

$$w(-12) = -24 - 5$$

$$\boxed{w(-12) = -29}$$

e)  $h(3) + a(10) - t(2)$

$$h(3) = 2(3 - 8)$$

$$h(3) = 2(-5)$$

$$h(3) = \underline{-10}$$

$$a(10) = \frac{5(10) - 10}{2}$$

$$a(10) = \frac{50 - 10}{2}$$

$$a(10) = \frac{40}{2}$$

$$a(10) = \underline{20}$$

$$t(2) = 6(2 + 11)$$

$$t(2) = 6(13)$$

$$t(2) = \underline{78}$$

$$h(3) + a(10) - t(2)$$

$$-10 + 20 - 78$$

$$= \boxed{-68}$$

$$w(-12) = -29$$

$$a(0) = 20$$

\*\*\*\*THE NEXT TWO QUESTIONS ARE DIFFERENT!!!!\*\*\*\*\*

f)  $w(x) = 63$

$$w(x) = 2x - 5$$

$$63 = 2x - 5$$

$$63 + 5 = 2x$$

$$\frac{68}{2} = \frac{2x}{2}$$

$$34 = x$$

g)  $t(x) = 216$

$$t(x) = 6(x+11)$$

$$216 = 6(x+11)$$

$$216 = 6x + 66$$

$$216 - 66 = 6x$$

$$\frac{150}{6} = \frac{6x}{6}$$

$$25 = x$$

5. Identify the domain & Range.

a)

b)

c)

5. Identify the domain & Range.

a)

w	g
1	20
2	25
3	30
4	35
5	40

$$D: \{1, 2, 3, 4, 5\}$$

$$R: \{20, 25, 30, 35, 40\}$$

b)

m	r
11	37
12	42
13	47
14	52
55	57

$$D: \{11, 12, 13, 14, 55\}$$

$$R: \{37, 42, 47, 52, 57\}$$

c)

k	v
10	112
11	123
12	134
13	145
14	156

$$D: \{10, 11, 12, 13, 14\}$$

$$R: \{112, 123, 134, 145, 156\}$$

$$f(x) = 3x^2 - 5 \quad g(x) = \frac{4x-2}{2} \quad \underline{h(x)} = 3(x-3)^2 + 4 \quad \underline{i(x)} = 6x$$

$$g(x) = 2x - 1$$

① Find h(-2)  $x = -2$

$$h(x) = 3(x-3)^2 + 4$$

$$h(-2) = 3(-2-3)^2 + 4$$

$$h(-2) = 3(-5)^2 + 4$$

$$h(-2) = 3(25) + 4$$

$$h(-2) = 75 + 4$$

$$h(-2) = \underline{79} \quad b)$$

$$(-2, \underline{79})$$

$x$   $y$

④ i(x) = 18  $y = 18$

$$\underline{i(x)} = 6x$$

$$\frac{18}{6} = \frac{6x}{6}$$

$$\underline{3} = x \quad b)$$

$$(\underline{3}, \underline{18})$$

$x$   $y$

$$\textcircled{5} \quad h(x) = 151$$

$$h(x) = 3(x-3)^2 + 4$$

$$151 = 3(x-3)^2 + 4$$

$$151 - 4 = 3(x-3)^2$$

$$\frac{147}{3} = \frac{3(x-3)^2}{3}$$

$$\sqrt{49} = \sqrt{(x-3)^2}$$

$$7 = x - 3$$

$$7 + 3 = x$$

$$10 = x \quad \text{a)}$$

## Assignment

Answers:

① b)

② a)

③ c)

④ b)

⑤ a)

⑥ d)

⑦ c)

⑧ a)

①  $f(6) = 103$

②  $g(6) - i(4) = -13$

③  $x = 9$

a) Non Function

D:  $\{x \mid x \geq -6, x \in \mathbb{R}\}$

R:  $\{y \mid y \leq 4, y \in \mathbb{R}\}$

b) Function

D:  $\{x \mid x \in \mathbb{R}\}$

R:  $\{y \mid y \geq -4, y \in \mathbb{R}\}$



## Review sheet

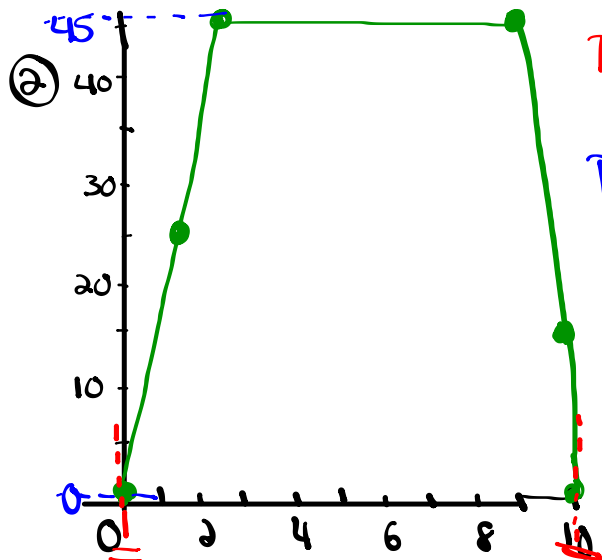
① Identify the domain, range, and if each is a function or non-function.

a)  $\{(\underline{0}, \underline{0}), (\underline{5}, \underline{1}), (\underline{10}, \underline{2}), (\underline{15}, \underline{3}), (\underline{20}, \underline{4})\}$

Domain:  $\{0, 5, 10, 15, 20\}$

Range:  $\{0, 1, 2, 3, 4\}$

It is a function because the x-values do not repeat



D:  $\{x \mid 0 \leq x \leq 10, x \in \mathbb{R}\}$

R:  $\{y \mid 0 \leq y \leq 45, y \in \mathbb{R}\}$

Function

$$\textcircled{c} \quad a(x) = 3(x-2) + 5$$

$$t(x) = -15x + 7$$

$$m(x) = 5x^2 - 9$$

$$h(x) = \frac{1}{2}x - 11$$

$$a) \quad a(x) = 68$$

$$a(x) = 3(x-2) + 5$$

$$68 = 3(x-2) + 5$$

$$68 - 5 = 3(x-2)$$

$$63 = 3(x-2)$$

$$63 = 3x - 6$$

$$63 + 6 = 3x$$

$$\frac{69}{3} = \frac{3x}{3}$$

$$\boxed{23 = x}$$

$$\therefore a(\underline{23}) = \underline{68}$$

$$(\underline{23}, \underline{68})$$

$$d) \quad h(\underline{100})$$

$$h(x) = \frac{1}{2}x - 11$$

$$h(\underline{100}) = \frac{1}{2}(\underline{100}) - 11$$

$$h(100) = 50 - 11$$

$$\boxed{h(100) = 39}$$

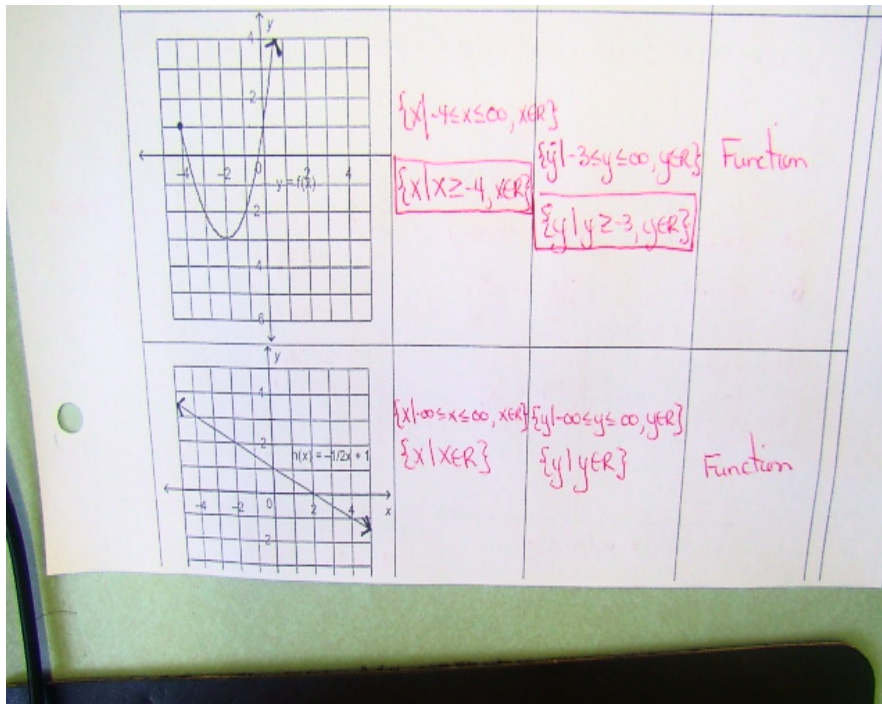
$$(\underline{100}, \underline{39})$$

1. Identify the domain, range and if each is a function or non-function?

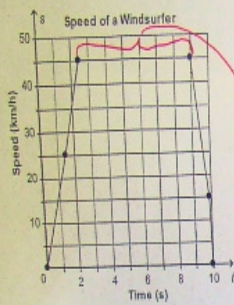
- F a)  $\{(0,0), (5,1), (10,2), (15,3), (20,4)\}$  D:  $\{0,5,10,15,20\}$  R:  $\{0,1,2,3,4\}$
- NF b)  $\{(0,3), (0,1), (1,2), (2,3), (4,4)\}$  D:  $\{0,1,2,4\}$  R:  $\{3,1,2,4\}$
- F c)  $\{(0,5), (5,6), (1,2), (7,9), (15,4)\}$  D:  $\{0,5,1,7,15\}$  R:  $\{5,6,2,9,4\}$
- F d)  $\{(0,6), (8,1), (10,1), (15,3), (20,4)\}$  D:  $\{0,8,10,15,20\}$  R:  $\{6,1,3,4\}$
- NF e)  $\{(10,8), (16,4), (12,7), (10,3), (19,6)\}$  D:  $\{10,16,12,19\}$  R:  $\{8,4,7,3,6\}$

2. Complete the chart:

Relation	Domain	Range	Function / Nonfunction
	$\{x   0 \leq x \leq 10, x \in \mathbb{R}\}$	$\{y   0 \leq y \leq 45, y \in \mathbb{R}\}$	Function

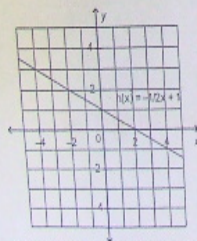


3. This graph shows the speed of a windsurfer,  $s$ , as a function of time,  $t$ .



- a) How long did the windsurfing last? *10 seconds*
  - b) How long was the windsurfer's speed 45km/h? *(9.5s - 2.5s)*
- 6.5 seconds*

4. This is a graph of the function



$h(x) = -\frac{1}{2}x + 1$      a)  $h(-2) = -\frac{1}{2}(-2) + 1$

$= +1 + 1$   
 $= \boxed{2}$

b)  $-1 = -\frac{1}{2}x + 1$

$-2 = -\frac{1}{2}x$

$\boxed{4 = x}$

- a) Determine the value of  $y$  when the  $x$  value is  $-2$ .
- b) Determine the value of  $x$  when the  $y$  value is  $-1$ .

6.

$$a(x) = 3(x-2) + 5 \quad t(x) = -15x + 7 \quad m(x) = 5x^2 - 9 \quad h(x) = 1/2x - 11$$

a)  $a(x) = 68$

$$68 = 3(x-2) + 5$$

$$\frac{68}{3} = \frac{3(x-2)}{3} + \frac{5}{3}$$

$$23 = x-2$$

$$\boxed{23 = x}$$

b)  $t(x) = 862$

$$862 = -15x + 7$$

$$\frac{855}{-15} = \frac{-15x}{-15} + \frac{7}{-15}$$

$$\boxed{-57 = x}$$

c)  $a(10)$

$$a(10) = 3(10-2) + 5$$

$$= 3(8) + 5$$

$$= 24 + 5$$

$$\boxed{= 29}$$

d)  $h(100)$

$$h(100) = \frac{1}{2}(100) - 11$$

$$= 50 - 11$$

$$\boxed{= 39}$$

e)  $m(a(5)) = m(4) = \boxed{91}$

f)  $h(30) + m(5)$

$$4 + 116 = \boxed{120}$$

