

Unit 3.4 – Features of Functions

Warmup – Use the given information to create a graph.

Domain: $[-5, 8)$

Range: $(-6, 3]$

Maximum: $(-5, 3)$

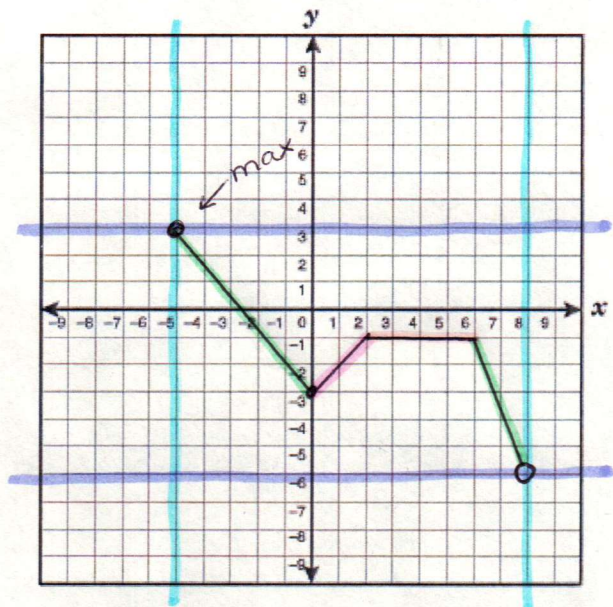
Minimum: ~~None~~

Interval of Increase: $(0, 2)$

Interval of Decrease: $(-5, 0) \cup (6, 8)$

Constant Interval: $(2, 6)$

x values



Lesson – Function Notation

name of function

input - tells us what value to use in the equation (often x)

$$f(2) = 3x + 4$$

$$= 3(2) + 4$$

$$f(2) = 10$$

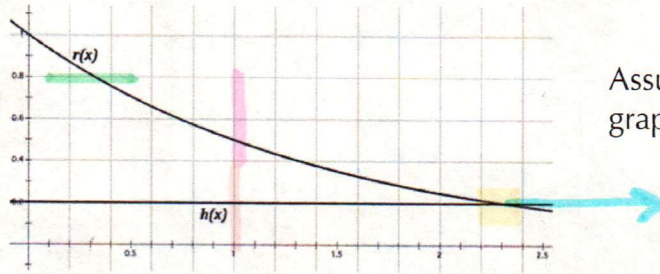
\uparrow \uparrow
 x y
 $(2, 10)$

$$f(x) = 3x + 4$$

output - the answer to the equation when the given input was used (often y)

the equation for the function
answer = output

Use the given graphed functions to answer each question.



Assume the domain of both graphs is \mathbb{R} .

given x
want y

- a) Evaluate: $h(1)$
What is y when $x=1$?
 $h(1) = .2$

- b) Evaluate: $r(1)$
What is y when $x=1$?
 $r(1) = .5$

given y
want x

- c) Determine the value of x when $r(x) = 0.8$:
What is the value of x when $y=0.8$?
 $r(.3) = .8$

- d) Where does $h(x) = r(x)$?
What is the ordered pair for where the lines cross? $(2.3, .2)$

- e) On what interval is $h(x) > r(x)$?
For what x values is the graph of h above the graph of r?
 $(2.3, \infty)$

- f) What does it mean if two functions are equal?
That is where the two graphs intersect or overlap.

- g) What does it mean when $<$ or $>$ are used to compare two functions?
Where is the graph above or below the other graph.
 $f(x) > g(x)$ above
 $f(x) < g(x)$ below

Use the given functions to answer each question.

$$f(x) = 3x - 5$$

$$g(x) = -x - 4$$

h) Evaluate: $g(-6)$

Which function?: g

$$x = \underline{-6}$$

$$g(-6) = -(-6) - 4 \\ = 6 - 4$$

$$\boxed{g(-6) = 2 \\ (-6, 2)}$$

i) Evaluate: $f(1)$

Which function?: f

$$x = \underline{1}$$

$$f(1) = 3(1) - 5 \\ = 3 - 5$$

$$\boxed{f(1) = -2 \\ (1, -2)}$$

Give the ordered pair that the function notation indicates.

j) $m(2) = 5$

$$x = \underline{2}$$

$$y = \underline{5}$$

Ordered pair: $(2, 5)$

k) $n(-3) = 0$

$$x = \underline{-3}$$

$$y = \underline{0}$$

Ordered pair: $(-3, 0)$

Graph both points.

