DO NOW

Using the table of values, find the following:

x	-5	-3	0	2	8	9	20
f(x)	8	2	-1	9	4	4	0

(1) f(-3) $= 2$

$(-3, 2)(8, 4)$

(2) Average rate of change for the interval [-3,8]

$$\frac{y_2 - y_1}{x_2 - x_1} \qquad \frac{4-2}{8-(-3)}$$

(3) If f(x) = 9, what is x?

$X = 2$

(4) If f(x) = 0, what is x?

$X = 20$

$m = \frac{2}{11}$

Jan 5-9:10 AM

Homework Answers   Practice

Comparing

A $36 \cdot 6 (0, -4)$

$(6, -40)$

B -3

C $\frac{-7}{6}$

$-X^2 - 4$

$-(6)^2 - 4$

$-36 - 4$

1) (0, -3) & (4,5)

$m = 2$

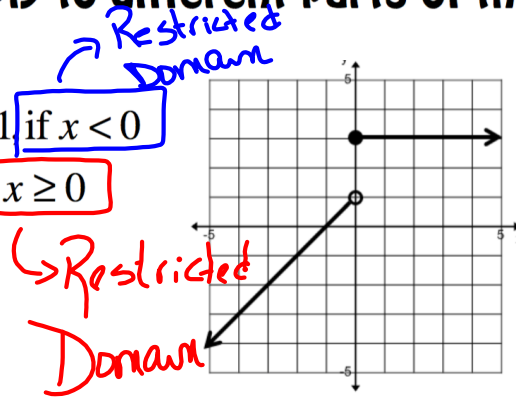2) (-6, 1) & (-2, -3)

$m = -1$

3) (-1,-2) & (2,7)

$m = 3$

2 - 0   2

Dec 14-7:08 AM

What is a Piecewise Function?

A piecewise function is defined by at least two different rules that apply to different parts of the domain.

→ *Restricted Domain*

Example: $f(x) = \begin{cases} x+1, & \text{if } x < 0 \\ 3, & \text{if } x \geq 0 \end{cases}$

↳ *Restricted Domain*

$y = 2x$

Dec 12-6:47 PM

Evaluating a Piecewise Function

To evaluate a piecewise function, substitute the value of x into the rule for the part of the domain that includes the value of x.

1) Find f(1)   X = 1

Coordinate
(1, 5)

$f(x) = \begin{cases} x+4, & \text{if } x \leq 2 \\ 2x-1, & \text{if } x > 2 \end{cases}$

$f(x) = x+4 \quad (x \leq 2)$ $f(x) = 2x-1 \quad (x > 2)$

$f(1) = 1+4$ $1 \leq 2$ ✓ $1 > 2$ ✗

$f(1) = 5$

Dec 12-7:01 PM

2) Find $f(-1)$

$$f(x) = \begin{cases} x+1, \text{if } x \le -3 \\ 4x+2, \text{if } x > -3 \end{cases}$$

$f(x) = x+1 \quad (x \le -3)$

$-1 \ne -3$

$f(x) = 4x+2 \quad (x > -3)$

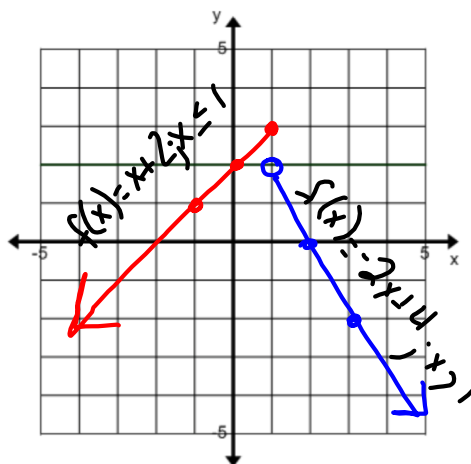$f(-1) = 4(-1)+2 \qquad -1 > -3$

$f(-1) = -4+2 \qquad \checkmark$

$f(-1) = -2$

Dec 12-7:02 PM

Graphing a Piecewise Function

5) Graph $y = x+2$

$$f(x) = \begin{cases} x+2, \text{if } x \le 1 \\ -2x+4, \text{if } x > 1 \end{cases}$$

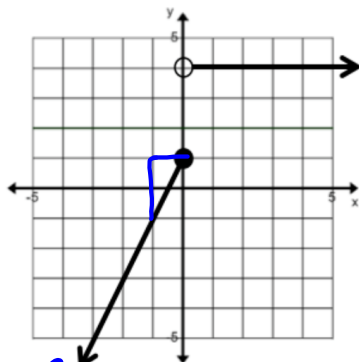| x		y
1		3
0		2
-1		1
1		2
2		0
3		-2

Dec 12-7:04 PM

3

Writing a Piecewise Function

Write the equation for each function whose graph is shown.

3)

$y = 4$

$x > 0$

$m = 2$
$b = 1$ $y = 2x + 1$

$x \leq 0$

$f(x) = \begin{cases} 4, & x > 0 \\ 2x+1; & x \leq 0 \end{cases}$

Dec 12-7:04 PM