

# Homework: Piecewise Functions

Name: \_\_\_\_\_  
 Alg. 1H - March 11/16

glue on page 73  
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1. Evaluate the piecewise function for  $x = 0$  and  $x = 6$ .

$$f(x) = \begin{cases} 1 & \text{if } x < 5 \\ 0 & \text{if } x \geq 5 \end{cases}$$

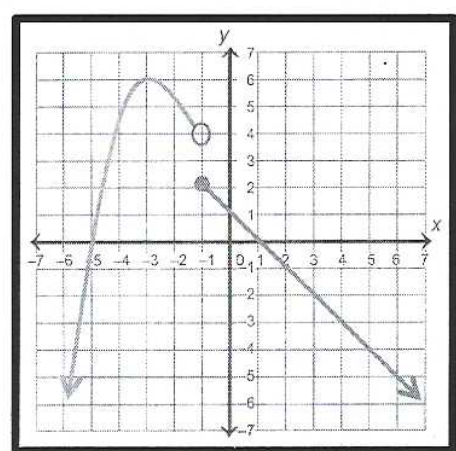
↑  
rule

$f(0) = 1$  because  $0 < 5$ , use the rule  $x < 5$

$f(6) = 0$  because  $6 \geq 5$ , use the rule  $x \geq 5$

2. On what interval is the quadratic function defined?

- $x$  is less than  $-1$
- $x < -1$
- $(-\infty, -1)$



On what interval is the linear function defined?

- $x$  is greater than or equal to  $-1$
- $x \geq -1$
- $[-1, \infty)$

3. What is the solution set of the equation  $\frac{3x^2}{3} = 48$ ?

- 1)  $\{-2, -8\}$
- 2)  $\{2, 8\}$
- 3)  $\{4, -4\}$
- 4)  $\{4, 4\}$

$$\sqrt{x^2} = \sqrt{16}$$

$$x = \pm 4$$

4. Solve for the following system of equations algebraically:

$$\begin{aligned} 4(3x + 2y = 4) &\rightarrow 12x + 8y = 16 \\ -3(4x + 3y = 7) &\rightarrow -12x - 9y = -21 \\ \hline -y &= -5 \\ y &= 5 \end{aligned}$$

$$\begin{aligned} 3x + 2y &= 4 \\ 3x + 2(5) &= 4 \\ 3x + 10 &= 4 \\ -10 & -10 \\ \hline 3x &= -6 \\ \frac{3x}{3} &= \frac{-6}{3} \\ x &= -2 \end{aligned}$$

$(-2, 5)$

5.

Graph  $f(x) = \begin{cases} -3x + 2 & \text{if } x \leq 2 \\ \frac{1}{2}x - 4 & \text{if } x > 2 \end{cases}$   $m = -\frac{3}{1}$   $b = 2$

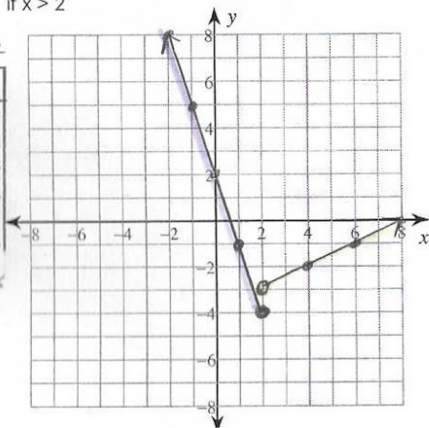
*closed*  
 $x \leq 2$

*closed*  
 $x > 2$

x	y
2	-4
1	-1
0	2

x	y
2	3
4	2
6	-1

multiples of 2



6. Graph:  $f(x) = \begin{cases} x + 5 & x < -2 \\ -2x - 1 & x \geq -2 \end{cases}$   $m = \frac{1}{1}$   $b = 5$

*open circle*  
*closed*

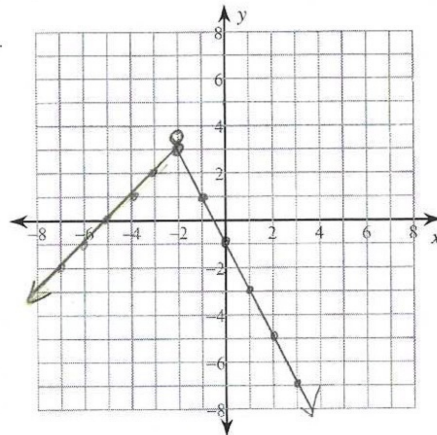
Is it a function? yes

Evaluate for graph when

$f(3) = \underline{-7}$

$f(-4) = \underline{1}$

$f(-2) = \underline{3}$



7. Graph:  $f(x) = \begin{cases} 2x + 1 & x \leq 1 \\ \frac{1}{2}x - 3 & x < 1 \end{cases}$   $m = \frac{2}{1}$   $b = 1$

*closed*  
*closed*

Is it a function? yes

Evaluate for graph when

$f(-2) = \underline{-4}$

$f(6) = \underline{13}$

$f(1) = \underline{3}$

*x closed*

x	y
1	3
2	5
3	7

*x < 1*

x	y
2.5	2.5
0	-3
-2	-4

