

Homework: Piecewise Functions

Name: _____

Alg. 1H - March 11

glue on page 73

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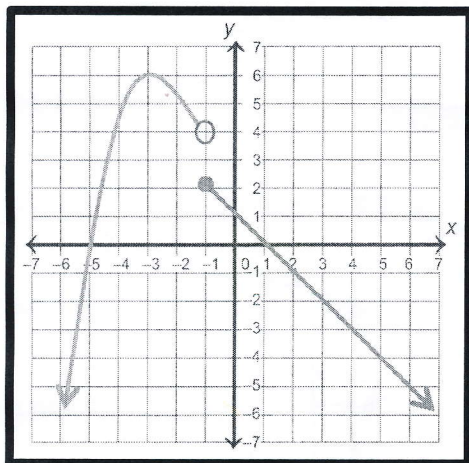
1. Evaluate the piecewise function for $x = 0$ and $x = 6$.

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

$f(0) = 1$ 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 ≥ -1
- $[-1, \infty)$

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

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

$$\frac{3x^2}{3} = \frac{48}{3}$$

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

$$x = \pm 4$$

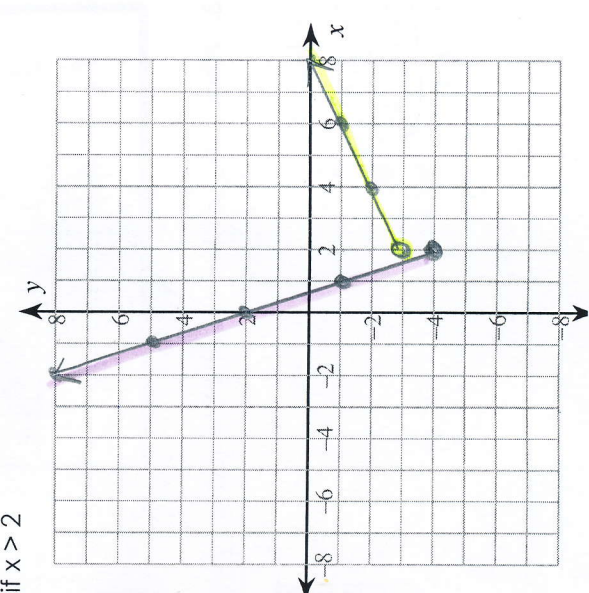
1. Solve for the following system of equations algebraically:

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

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

$(-2, 5)$

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



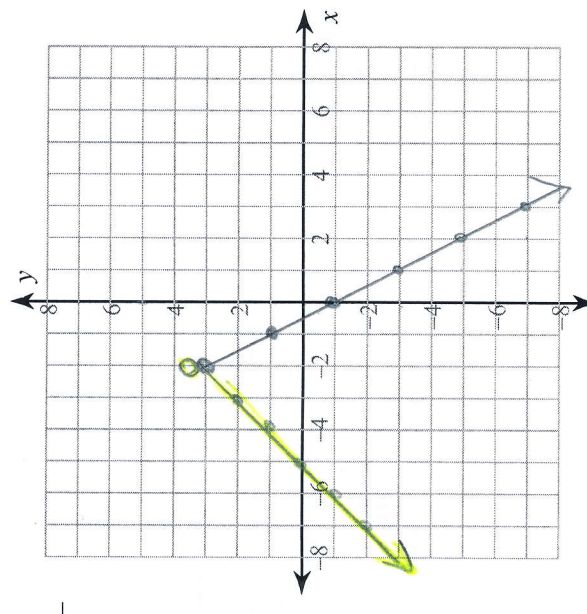
x	y
2	-3
4	-4
6	-5

↑ multiples of 2

x	y
2	-4
1	-1
0	2

6. Graph: $f(x) = \begin{cases} x + 5 \\ -2x - 1 \end{cases}$

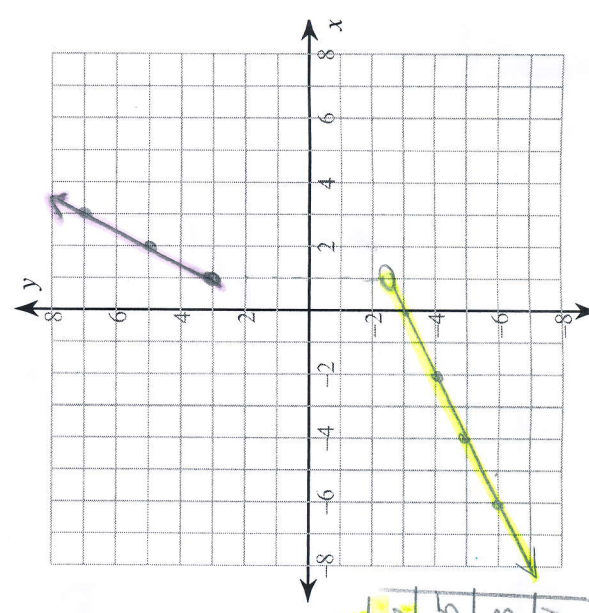
open circle $x < -2 \rightarrow m = 1 \quad b = 5$
closed $x \geq -2 \rightarrow m = -2 \quad b = -1$



Is it a function? yes
Evaluate for graph when
 $f(x)$
 $f(3) = 7$
 $f(-4) = 1$
 $f(-2) = 3$

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

closed $x \geq 1 \rightarrow m = \frac{2}{1} \quad b = 1$
 $x < 1 \rightarrow m = \frac{1}{2} \quad b = -3$



Is it a function? yes
Evaluate for graph when
 $f(-2) = -4$
 $f(6) = 13$
 $f(1) = 3$

x	y
1	2.5
0	-3
-2	-4

x	y
1	4
2	3
3	5
3	7