

Chapter 12 & 13 Review Packet

①
$$\begin{cases} x + 3y > 3 \\ -x + y \leq 6 \end{cases}$$

$x + 3y > 3$

x-intercept

$x + 3y = 3$

$x + 3(0) = 3$

$x + 0 = 3$

$x = 3$

$(3, 0)$

y-intercept

$x + 3y = 3$

$0 + 3y = 3$

$\frac{3y}{3} = \frac{3}{3}$

$y = 1$

$(0, 1)$

$-x + y \leq 6$

x-intercept

$-x + y = 6$

$-x + 0 = 6$

$\frac{-x}{-1} = \frac{6}{-1}$

$x = -6$

$(-6, 0)$

y-intercept

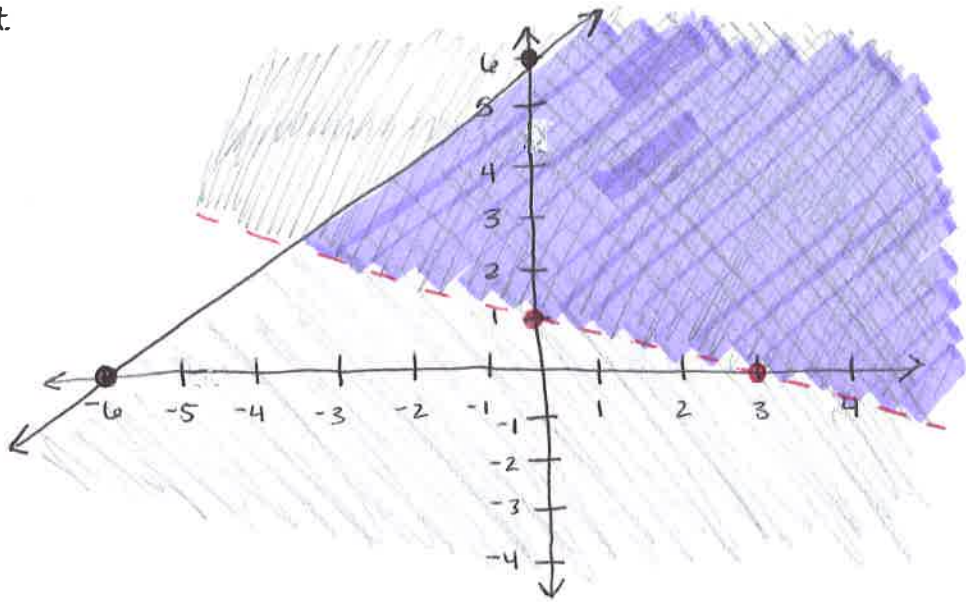
$-x + y = 6$

$-(0) + y = 6$

$0 + y = 6$

$y = 6$

$(0, 6)$



②
$$\begin{cases} y < 4x - 3 \\ y > 4x + 2 \end{cases}$$

$y < 4x - 3$

x-intercept

$y = 4x - 3$

$0 = 4x - 3$

$+3 \quad +3$

$\frac{3}{4} = \frac{4x}{4}$

$\frac{3}{4} = x$

$(\frac{3}{4}, 0)$

y-intercept

$y = 4x - 3$

$y = 4(0) - 3$

$y = 0 - 3$

$y = -3$

$(0, -3)$

$y > 4x + 2$

x-intercept

$y = 4x + 2$

$0 = 4x + 2$

$-2 \quad -2$

$\frac{-2}{4} = \frac{4x}{4}$

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

$(-\frac{1}{2}, 0)$

y-intercept

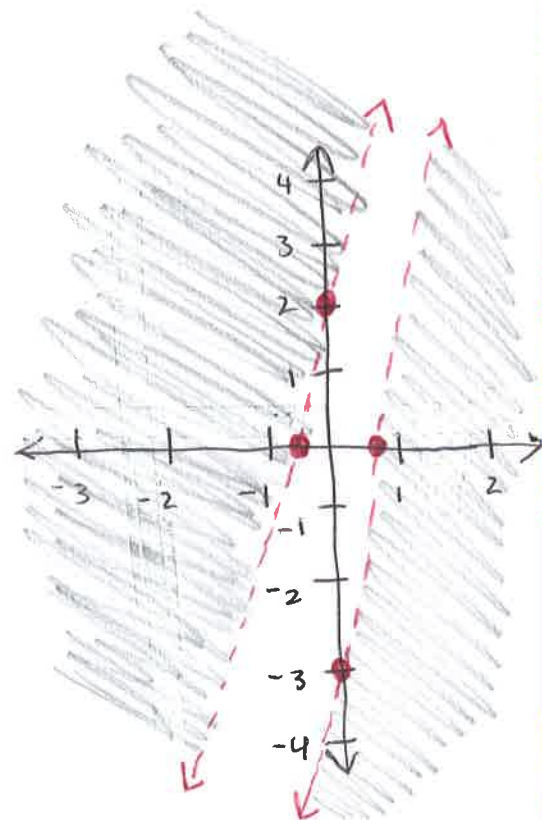
$y = 4x + 2$

$y = 4(0) + 2$

$y = 0 + 2$

$y = 2$

$(0, 2)$



No Solutions.

③ Angelique is buying towels for her apartment. She finds some green towels that cost \$8.00 each and towels that cost \$10.00 each. She wants to buy at least 4 towels but doesn't want to spend more than \$70.00. How many towels can she purchase? Set up a system of linear inequalities then graph and shade your results.

$$\begin{cases} x + y \geq 4 \\ 8x + 10y \leq 70.00 \end{cases}$$

$$x + y \geq 4$$

x-intercept

$$x + y = 4$$

$$x + 0 = 4$$

$$x = 4$$

$$(4, 0)$$

y-intercept

$$x + y = 4$$

$$0 + y = 4$$

$$y = 4$$

$$(0, 4)$$

$$8x + 10y \leq 70$$

x-intercept

$$8x + 10y = 70$$

$$8x + 10(0) = 70$$

$$\frac{8x}{8} = \frac{70}{8}$$

$$x = 8.75$$

$$(8.75, 0)$$

y-intercept

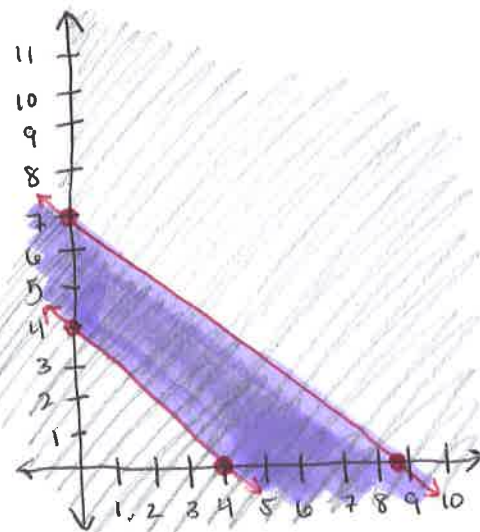
$$8x + 10y = 70$$

$$8(0) + 10y = 70$$

$$\frac{10y}{10} = \frac{70}{10}$$

$$y = 7$$

$$(0, 7)$$



④ $3 \left| \frac{1}{2}(x) + 5 \right| + 7 = 5$

Get by itself ↗

$$3 \left| \frac{1}{2}(x) + 5 \right| + 7 = 5$$

$$\frac{3 \left| \frac{1}{2}(x) + 5 \right|}{3} = \frac{-2}{3}$$

$$\left| \frac{1}{2}(x) + 5 \right| = \frac{-2}{3}$$

\emptyset
 No Solutions.

⑤ $9 \left| \frac{4}{3}(x) - 2 \right| + 7 = 7$

$$\frac{9 \left| \frac{4}{3}(x) - 2 \right|}{9} = \frac{0}{9}$$

$$\left| \frac{4}{3}(x) - 2 \right| = 0$$

$$\frac{4}{3}(x) - 2 = 0$$

$$\frac{3}{4} \left(\frac{4}{3}(x) \right) = (3) \frac{3}{4}$$

$$x = \frac{9}{4} = 2.25$$

$$x = 2.25$$

⑥ $3|x-7| \geq 9$

$$\frac{3|x-7|}{3} \geq \frac{9}{3}$$

$$|x-7| \geq 3$$

$$x-7 \geq 3 \quad x-7 \leq -3$$

$$+7 \quad +7 \quad +7 \quad +7$$

$$x \geq 10 \text{ OR } x \leq 4$$



⑦ $|2x+3| < 5$

$$2x+3 < 5$$

$$-3 \quad -3$$

$$\frac{2x}{2} < \frac{2}{2}$$

$$2x+3 > -5$$

$$-3 \quad -3$$

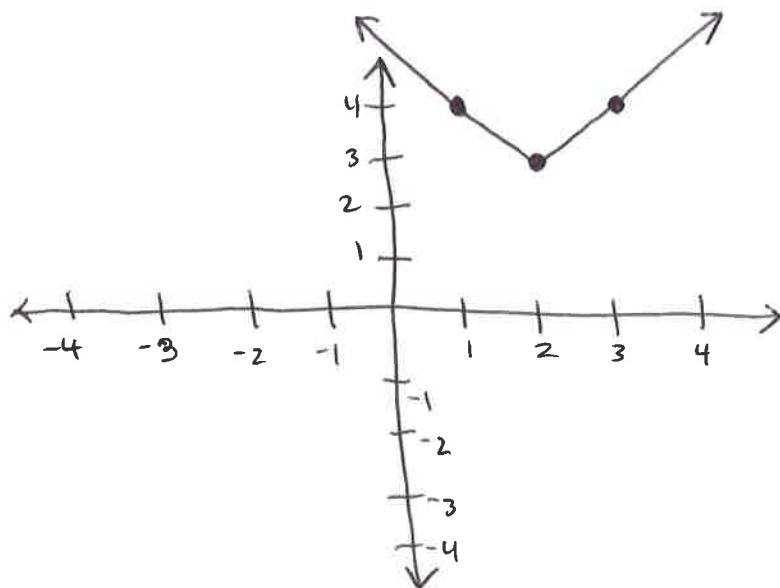
$$\frac{2x}{2} > \frac{-8}{2}$$

$$x < 1 \text{ AND } x > -4$$



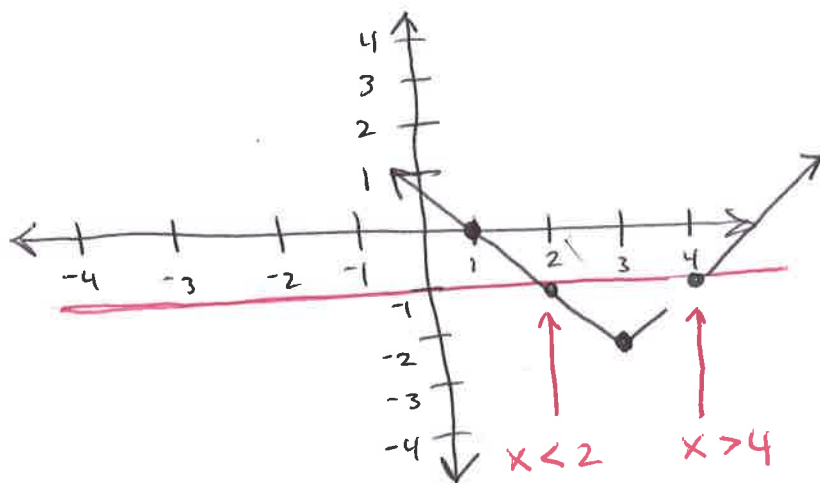
⑧ $f(x) = |x-2| + 3$
graph begins at (2, 3)

x	y
4	5
3	4
2	3
1	4
0	5



⑨ $|x-3| - 2 > -1$
graph begins at (3, -2)

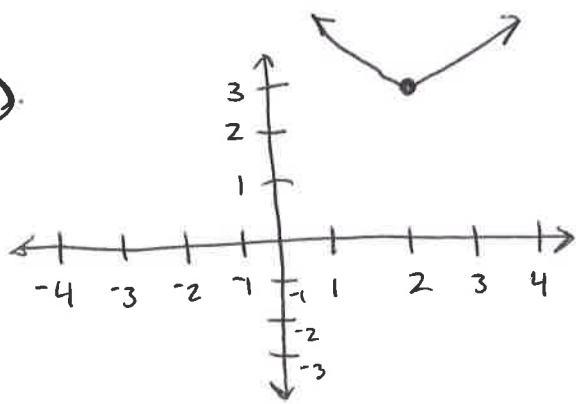
x	y
5	0
4	-1
3	-2
2	-1
1	0



$$x > -1$$

$$x < 2, \text{ or } x > 4$$

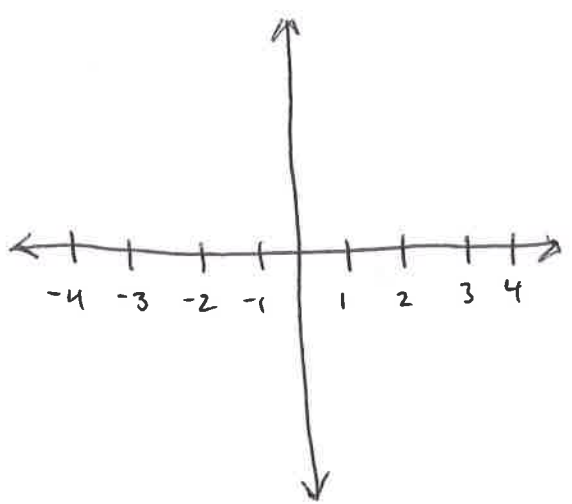
10



$$y = |x \pm k| \pm h$$

$$y = |x - 2| + 3$$

11



12

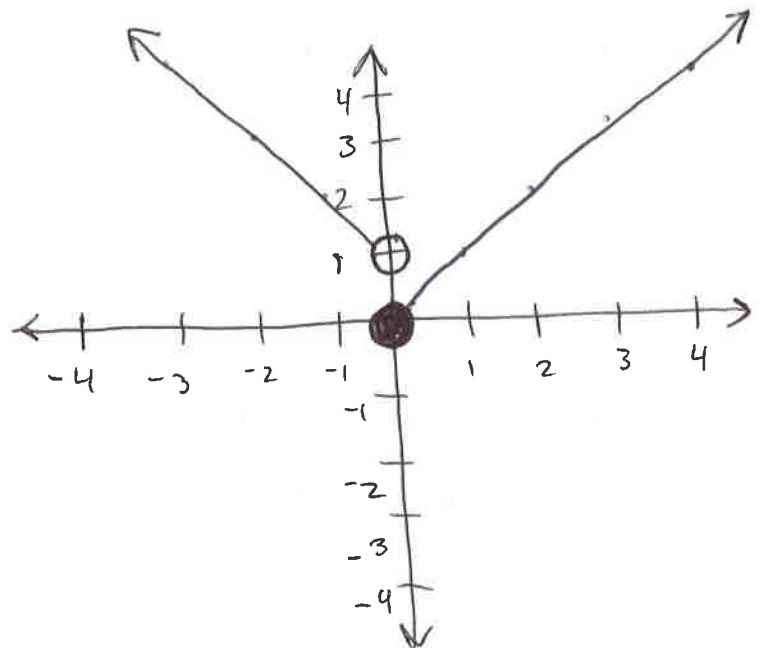
$$\begin{cases} -x + 1, & x < 0 \\ x, & x \geq 0 \end{cases}$$

$$y = -x + 1, x < 0$$

$$y = x, x \geq 0$$

x	y
0	1
-1	2
-2	3
-3	4

x	y
0	0
1	1
2	2
3	3



13 A garage charges the following rates for parking: \$4.00 for the first 2 hours, \$2.00 for the next four hours, and no additional charge for next 2 hours. Express the cost as a function of the time (t) that the car is parked in the garage

- 1st Equation = $4(x)$, $0 \leq x \leq 2$
- 2nd Equation = $2(x) + 4$, $2 < x \leq 6$
- 3rd Equation = 16 , $6 < x \leq 8$

$$f(x) = \begin{cases} 4x, & 0 \leq x \leq 2 \\ 2x + 4, & 2 < x \leq 6 \\ 16, & 6 < x \leq 8 \end{cases}$$

2nd Equation

$$y = 2x + b$$

$$8 = 2(a) + b$$

$$8 = 4 + b$$

$$-4 \quad -4$$

$$4 = b$$

$$y = 2x + 4$$

(2, 8)

Where graph 1 ends and graph 2 starts.

$$y = 2x + 4$$

$$y = 2(6) + 4$$

$$y = 12 + 4$$

$$y = 16$$

(6, 16)

Where graph 2 ends and graph 3 starts.