

Name: Key
Math 433—Pulford

Date: _____
HW 3

HW 3: Green Textbook Page 75 #11, 12, 19, 20 and Mixed Review below

Mixed Review

1. If $x = -3$, what is the value of $|x - 4| - x^2$?

$$\begin{aligned} & |-3 - 4| - (-3)^2 \\ & |-7| - (9) \\ & 7 - 9 = \boxed{-2} \end{aligned}$$

2. Solve algebraically for x : $3(x + 1) - 5x = 12 - (6x - 7)$

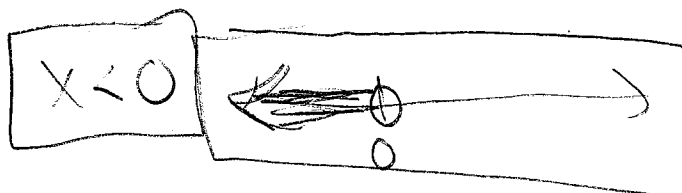
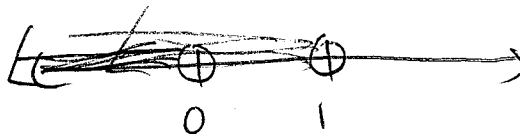
$$\begin{aligned} 3x + 3 - 5x &= 12 - 6x + 7 \\ -2x + 3 &= 19 - 6x \\ \frac{4x}{4} &= \frac{16}{4} \\ \boxed{x = 4} \end{aligned}$$

3. What is the result when $(2x - 3)^2$ is subtracted from $5x^2$?

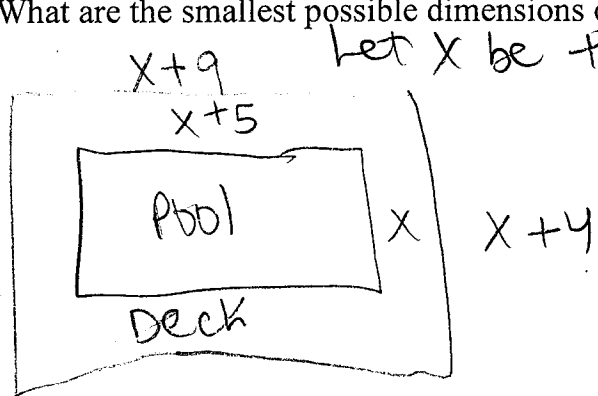
$$\begin{aligned} & 5x^2 - (2x - 3)^2 \\ & 5x^2 - (4x^2 - 6x - 6x + 9) \\ & 5x^2 - (4x^2 - 12x + 9) \\ & 5x^2 - 4x^2 + 12x - 9 \\ & \boxed{x^2 + 12x - 9} \end{aligned}$$

4. Solve for x and graph the solution: $4x - 1 < 3x$ and $2x + 5 \leq x + 5$

$$x < 1 \text{ and } x \leq 0$$



5. A swimming pool is 5 meters longer than it is wide and is surrounded by a deck 2 meters wide. The area of the pool and deck together is at least 140 m^2 greater than the area of the pool alone. What are the smallest possible dimensions of the pool in meters?



Let x be the width of the pool

$$(x+9)(x+4) \geq x(x+5) + 140$$

$$x^2 + 4x + 9x + 36 \geq x^2 + 5x + 140$$

$$x^2 + 13x + 36 \geq x^2 + 5x + 140$$

$$8x \geq 104$$

$$x \geq 13$$

13 m by 18 m

6. The cost of three notebooks and four pencils is \$8.50. The cost of five notebooks and eight pencils is \$14.50. Determine the cost of one notebook and the cost of one pencil.

Let n be cost of notebook
 p be cost of pencils

$$\begin{array}{l} -5[3n + 4p = 8.50] \\ 3[5n + 8p = 14.50] \end{array} \leftarrow \text{system of equations}$$

$$\begin{array}{r} -15n - 20p = -42.50 \\ + 15n + 24p = 43.50 \\ \hline 4p = 1.00 \\ \hline p = .25 \end{array}$$

$$3n + 4(.25) = 8.50$$

$$3n + 1.00 = 8.50$$

$$3n = 7.50$$

$$n = 2.50$$

7. Given that $a > b$, solve for x in terms of a and b :

$$b(x-3) \geq ax + 7b$$

$$bx - 3b \geq ax + 7b$$

$$bx - ax \geq 3b + 7b$$

$$bx - ax \geq 10b$$

$$x(b-a) \geq 10b$$

This is a negative number b/c $a > b$

$$x \leq \frac{10b}{b-a}$$

8. A store is selling footballs. The store sells the footballs at a 40% markup over the manufactured price. Two months later, the store reduced the sale price of the footballs by 60%. What percent discount is the new retail price for the footballs over the manufacturer price?

Let x be the price of a football at manufactured price

store sells football for $1.4x$ $[1 + .4]$

sale price of football $.4(1.4x)$ $[1 - .6]$
 $.56x$

The sale price is 44% off manufactured price

10. Solve for x : $\frac{x}{x+2} = \frac{4}{5}$

$$5x = 4(x+2)$$

$$5x = 4x + 8$$

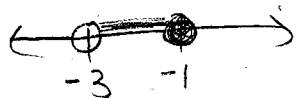
$$x = 8$$

11. Express the solution in interval notation: $1 \leq -(2s + 1) < 5$ or $1 \leq 2s - 1 < 5$

$$1 \leq -2s - 1 < 5 \quad \text{OR} \quad 1 \leq 2s - 1 < 5$$

$$\left[\begin{array}{l} 1 \leq -2s - 1 \text{ AND } -2s - 1 < 5 \\ 2 \leq -2s \qquad \qquad -2s < 6 \\ -1 \geq s \quad \wedge \quad s > -3 \end{array} \right]$$

$$-1 \geq s \quad \wedge \quad s > -3$$



$$-3 < s \leq -1$$

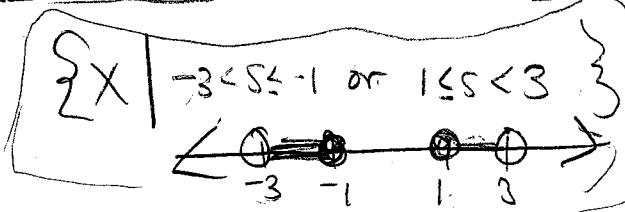
OR

$$\left[\begin{array}{l} 1 \leq 2s - 1 \text{ AND } 2s - 1 < 5 \\ 2 \leq 2s \qquad \qquad 2s < 6 \\ 1 \leq s \quad \wedge \quad s < 3 \end{array} \right]$$

$$1 \leq s \quad \wedge \quad s < 3$$



$$1 \leq s < 3$$

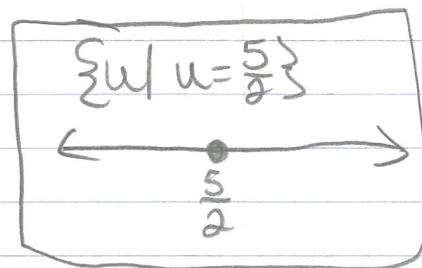




Key HW 3

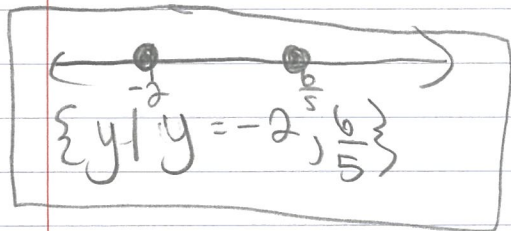
Page 75 #11, 12, 19, 20

11) $|2u - 5| = 0$
 $2u - 5 = 0$ or $-(2u - 5) = 0$
 $u = \frac{5}{2}$ $u = \frac{5}{2}$

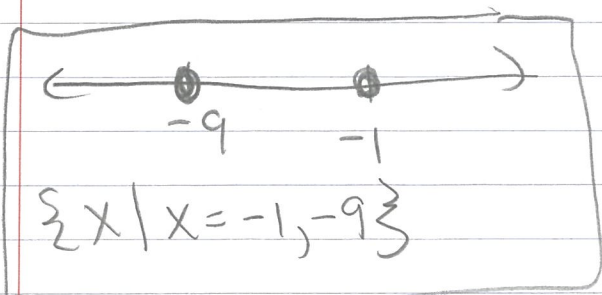


12) $8 = |5y + 2|$

$8 = 5y + 2$ OR $8 = -(5y + 2)$
 $6 = 5y$ $-8 = 5y + 2$
 $\frac{6}{5} = y$ $-\frac{10}{5} = \frac{5y}{5}$
 $-2 = y$



19) $|x + 5| - 3 = 1$
 $|x + 5| = 4$
 $x + 5 = 4$ OR $-(x + 5) = 4$
 $x = -1$ OR $x + 5 = -4$
 $x = -9$



20) $|2t - 3| + 2 = 5$

$|2t - 3| = 3$
 $2t - 3 = 3$ OR $-(2t - 3) = 3$
 $2t = 6$ $2t - 3 = -3$
 $t = 3$ OR $2t = 0$
 $t = 0$

