

35 pts

1. Answer one (1) of the following word problems. For word problems, I expect to see you assign your variable(s) in words (Let  $x = \dots$ ) and for you to give the units (for instance, "in dollars").

5 pts

- a. If Sue can paint the kitchen in 5 hours and Ellen can paint the kitchen in 3 hours, how long will it take them to paint the kitchen if they work together?
- b. John bought a book in a New York bookstore for \$169.03 (with tax). What's the price of the book before tax, if New York sales tax is 7%?

a. Let  $x =$  the # of hours it takes them working together.

Then  $\frac{1}{5}x + \frac{1}{3}x = 1$

$LCD = 15$

$3x + 5x = 15$

$8x = 15$

$x = \frac{15}{8}$

b. Let  $x =$  price of a book before tax (in \$)

Then  $x + .07x = 169.03$

$1.07x = 169.03$

$x = \frac{169.03}{1.07}$

$\approx \$157.97$

Solve. Write the final answer in interval notation. Leave fractions as fractions in lowest terms, even if they are improper fractions.

2. (5 pts)  $|x+2| \leq -7$

Never!

$\emptyset$

3. (5 pts)  $|5x+8| > -5$

Always

$(-\infty, \infty)$

5.7 #5 24, 30, 38

(6 pts)

4.  $-3x+4 \leq 18$

~~$3x \leq 22$~~

~~$x \geq \frac{22}{3}$~~

~~$[\frac{22}{3}, \infty)$~~

$-3x \leq 14$

$x \geq -\frac{14}{3}$

$[-\frac{14}{3}, \infty)$

(5pts) 5.  $|3x-4| \geq 5$

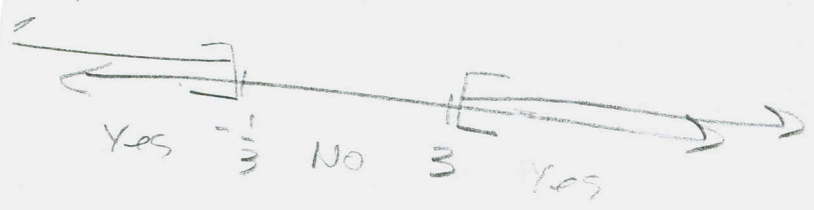
$$3x-4 \geq 5 \text{ OR } 3x-4 \leq -5$$

$$3x \geq 9 \text{ OR } 3x \leq -1$$

$$x \geq 3 \text{ OR } x \leq -\frac{1}{3}$$

~~$[-\frac{1}{3}, \infty) \cup$~~

$$\boxed{(-\infty, -\frac{1}{3}] \cup [3, \infty)}$$

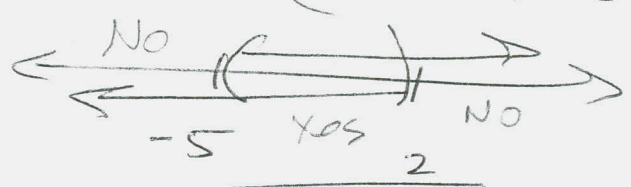


(5pts) 6.  $|2x+3| < 7$

$$2x+3 < 7 \text{ and } 2x+3 > -7$$

$$2x < 4 \text{ and } 2x > -10$$

$$x < 2 \text{ and } x > -5$$



$$\boxed{x \in (-5, 2)}$$

(5pts) 7.  $\frac{2x+3}{4} - \frac{3x-7}{3} \geq -4$  LCD = 12

$$12 \left( \frac{2x+3}{4} \right) - 12 \left( \frac{3x-7}{3} \right) \geq (12)(-4)$$

$$3(2x+3) - 4(3x-7) \geq -48$$

$$6x + 9 - 12x + 28 \geq -48$$

$$-6x + 37 \geq -48$$

$$-6x \geq -85$$

$$x \leq \frac{85}{6}$$

$$\boxed{(-\infty, \frac{85}{6}]}$$

