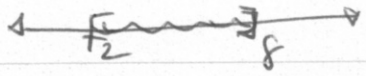
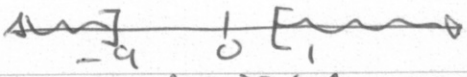
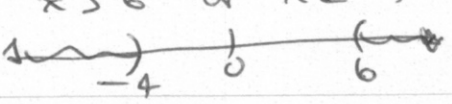
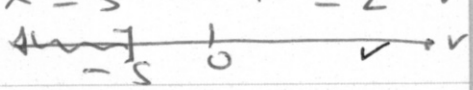
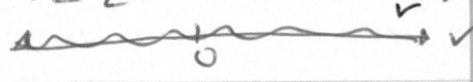
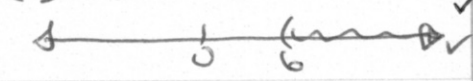
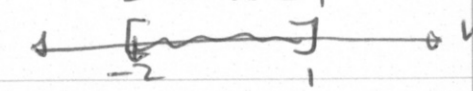
1	$\{0, 1, 2, \ldots 9\}$	16	$\{0, -4\}$
2	$\{1, 3, 5\}$	17	$2 \leq x \leq 8$ 
3	$\{0, 2, 4, 6, 9, e, i, o, u\}$	18	
4	$\varnothing$	19	$-4 < x < 4$ 
5	$\{a, b, c, 1, 2, 3\}$	20	$x > 6$ or $x < -4$ 
6	$\varnothing$	21	$(-\infty, 4) \cup (4, \infty)$
7	$x < -4$ or $x > 4$ 	22	$(-\infty, -5]$
8	$x \leq -5$ and $x \leq 2$ 	23	$[7, 8]$
9	$x \geq 2$ or $x \leq 4$ 	24	$(-\infty, -9] \cup [1, \infty)$
10	$x > -2$ and $x > 6$ 	25	$\{x \mid x < -4 \text{ or } x > 4\}$
11	$-2 \leq x \leq 1$ 	26	$\{x \mid x \leq -5\}$
12	$2 \leq x \leq 4$ 	27	$\{x \mid 2 \leq x \leq 8\}$
13	$\{20, -20\}$	28	$\{x \mid x \geq 1 \text{ or } x \leq -9\}$
14	$\{4, -4\}$	29	Solutions
15	$\varnothing$	30	

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East Los Angeles College

Department of Mathematics

Math 125

Test 1

Let $A = \{0,2,4,6\}$ $B = \{1,3,5\}$ $C = \{a, b, c, 1,2,3\}$ $D = \{0,1,2,3,4,5,6,7,8,9\}$
$E = \{a, e, i, o, u\}$

Determine the following operations with the indicated sets.

1) $B \cup D$

2) $B \cap D$

3) $A \cup E$

4) $A \cap E$

5) $C \cup \emptyset$

6) $C \cap \emptyset$

Solve and graph the following compound inequalities.

7) $x - 8 < -12$ or $-x + 7 < 3$

8) $3x \leq -15$ and $-2x - 4 \geq -8$

9) $4x - 1 \geq 7$ or $x - 6 \leq -2$

10) $5x > -10$ and $x + 3 > 9$

11) $-3 < 4x + 5 < 9$

12) $3 \leq 5x - 7 \leq 13$

Solve the following absolute value equations and write your answers in set notation.

13) $|x| - 12 = 8$

14) $3|x| + 7 = 19$

15) $|x - 6| + 8 = 4$

16) $-4|x + 2| + 11 = 3$

Solve and graph the following linear inequalities.

17) $|x - 5| \leq 3$

18) $2|x + 4| \geq 10$

19) $|3x| - 5 < 7$

20) $4|x - 1| > 20$

Write your solutions in interval notation

21) Problem 7

22) Problem 8

23) Problem 17

24) Problem 18

Write solutions in set notation

25) Problem 7

26) Problem 8

27) Problem 17

28) Problem 18

29) What is your name?

math 125 Test 1

B ∪ D

(1) $\{1,3,5\} \cup \{0,1,2,\ldots 9\}$

$= \{1,3,5,0,1,2,\ldots 9\}$

ie, $\boxed{\{0,1,2,3,\ldots 9\}}$

(2) $B \cap D$

$\{1,3,5\} \cap \{0,1,2,3,\ldots 9\}$

$\{1,3,5\}$

(3) $A \cup E$

$\{0,2,4,6\} \cup \{a,e,i,o,u\}$

$\boxed{\{0,2,4,6,a,e,i,o,u\}}$

(4) $A \cap E = \{\}$ $\boxed{\emptyset}$

(5) $C \cup \emptyset$

$\{a,b,c,1,2,3\} \cup \{\} = \boxed{\{a,b,c,1,2,3\}}$

(6) $C \cap \emptyset = \boxed{\emptyset}$

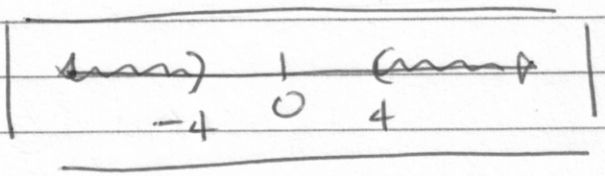
(7) $x - 8 < -12$ or $-x + 7 < 3$

$+8 \quad +8$ $\quad -7 \quad -7$

$-x < -4$

$x < -4$ or $\frac{-1x}{-1} < \frac{-4}{-1}$

$x > 4$

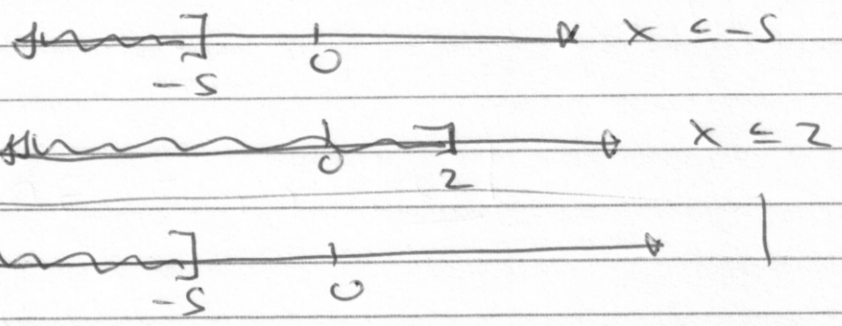


(8) $\frac{3x}{3} \leq \frac{-15}{3}$ and $-2x - 4 \geq -8$

$+4 \quad +4$

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

$x \leq -5$ and $x \leq 2$

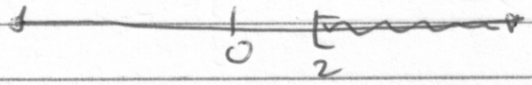


(9) $4x - 1 \geq 7$ or $x - 6 \leq -2$

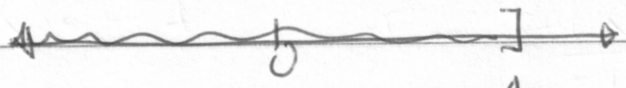
$+1 \quad +1$ $\quad +6 \quad +6$

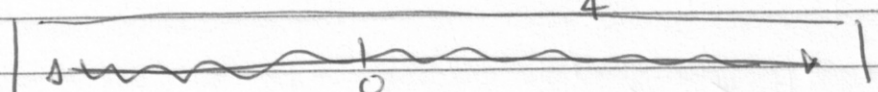
$\frac{4x}{4} \geq \frac{8}{4}$ (or) $x \leq 4$

$x \geq 2$



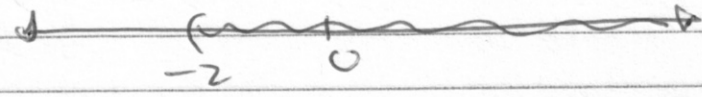
$x \geq 2$



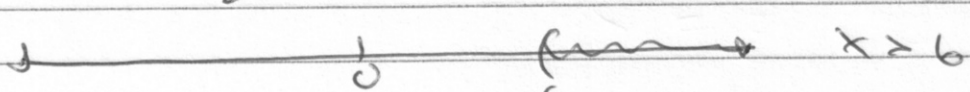


(10) $\frac{5x}{5} > \frac{-10}{5}$ and $x+3 > 9$
$-3 \quad -3$

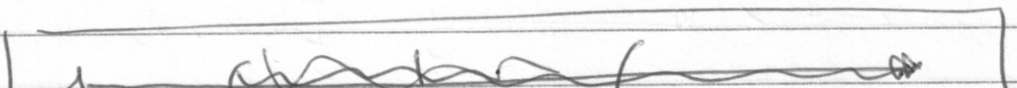
$x > -2$ and $x > 6$



$x > -2$



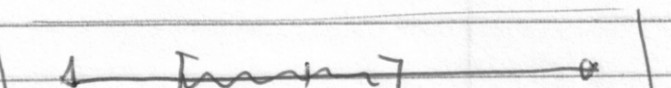
$x > 6$



(11) $-3 < 4x + 5 < 9$
$-5 \quad -5 \quad -5$

$\frac{-8}{4} < \frac{4x}{4} < \frac{4}{4}$

$-2 \leq x \leq 1$

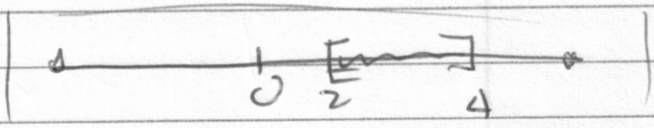


(12) $3 \leq 5x - 7 \leq 13$

$+2 \quad +7 \quad +7$

$\frac{10}{5} \leq \frac{5x}{5} \leq \frac{20}{5}$

$2 \leq x \leq 4$



(13) $|x| - 12 = 8$

$+12 \quad +12$

$|x| = 20$

$x = 20$ | $x = -20$

$\{20, -20\}$

(14) $3|x| + 7 = 19$

$-7 \quad -7$

$\frac{3|x|}{3} = \frac{12}{3}$

$|x| = 4$

$x = 4$ | $x = -4$

$\{4, -4\}$

(15) $|x - 6| + 8 = 4$

$-8 \quad -8$

$|x - 6| = -4$

$\{\}$

(16) $-4|x+2|+11 = 3$

$-11 \quad -11$

$\frac{-4|x+2|}{-4} = \frac{-8}{-4}$

$|x+2| = 2$

$x+2=2 \quad \text{OR} \quad x+2=-2$

$-2 \quad -2 \qquad -2 \quad -2$

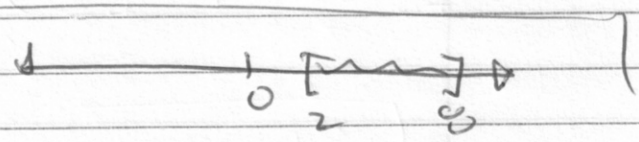
$x=0 \qquad x=-4$

$\{0, -4\}$

(17) $|x-5| \leq 3$

$-3 \leq x-5 \leq 3$

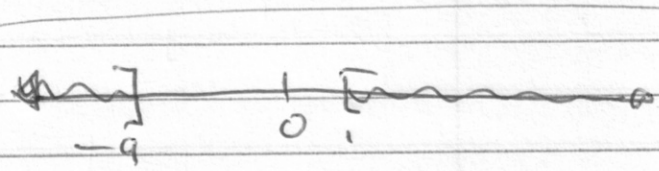
$+5 \quad +5 \quad +5$



$2 \leq x \leq 8$

(18) $\frac{2|x+4|}{2} \geq \frac{10}{2}$

$|x+4| \geq 5$



$x+4 \geq 5 \quad \text{or} \quad x+4 \leq -5$

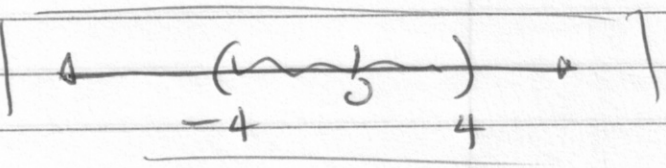
$-4 \quad -4 \qquad -4 \quad -4$

$x \geq 1 \qquad x \leq -9$

(19) $|3x| - 5 < 7$

$+5 \quad +5$

$|3x| < 12$

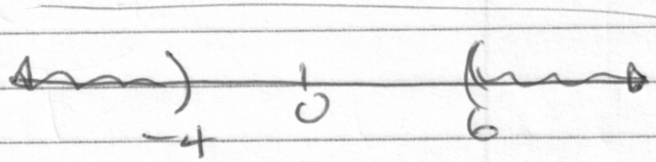


$\frac{-12}{3} < \frac{3x}{3} < \frac{12}{3}$

$-4 < x < 4$

(20) $4|x-1| > 20$

$\frac{4}{4} \quad \frac{20}{4}$



$|x-1| > 5$

$x-1 > 5$ or $x-1 < -5$

$+1 \quad +1 \qquad +1 \quad +1$

$x > 6$ $\qquad$ $x < -4$

(21) $(-4, \infty) \cup (4, \infty)$

(22) $(-\infty, -5]$

(23) $[2, 5]$

(24) $(-\infty, -9] \cup [1, \infty)$