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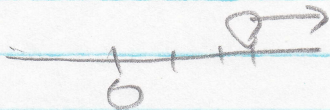
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 $3(8-4x) < 9-7x$

$$24-12x < 9-7x$$

$$-24+7x \quad -24+7x$$

$$\frac{-5x < -15}{-5 \quad -5}$$

$$x > 3$$



(b) $\frac{1}{3}(x-3) \leq \frac{x-2}{4}$

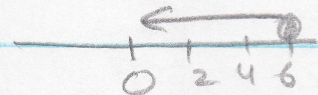
$$\frac{4}{4} \frac{x-3}{3} \leq \frac{x-2}{4} \cdot \frac{3}{3} \rightarrow \text{multip by 12}$$

$$4(x-3) \leq 3(x-2)$$

$$4x-12 \leq 3x-6$$

$$-3x+12 \quad -3x+12$$

$$x \leq 6$$

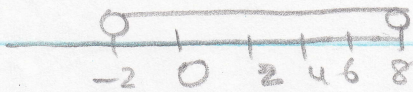


2a $|x-3| < 5$

$$-5 < x-3 < 5$$

$$+3 \quad +3 \quad +3$$

$$-2 < x < 8$$



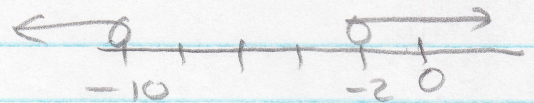
(2b) $|x+6| > 4$

$$x+6 > 4 \quad \text{OR} \quad x+6 < -4$$

$$-6 \quad -6$$

$$-6 \quad -6$$

$$x > -2 \quad \text{OR} \quad x < -10$$



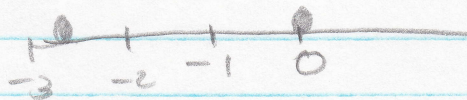
2c $|3x+4| = 4$

$$3x+4=4 \quad \text{OR} \quad 3x+4=-4$$

$$3x=0$$

$$3x=-8$$

$$x=0 \quad \text{OR} \quad x = -\frac{8}{3}$$



(2d) $|7-5x| \leq 2$

$$-2 \leq 7-5x \leq 2$$

$$-7 \quad -7 \quad -7$$

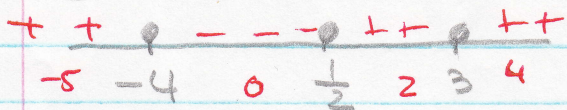
$$\frac{-9 \leq -5x \leq -5}{-5 \quad -5 \quad -5}$$

$$\frac{9}{5} > x > 1$$

$$1 \leq x \leq \frac{9}{5}$$



3a $(2x-1)(x+4)(x-3)^2 > 0$



-5: - - - - - $x \leq -4$ OR

0: - + + - - $x > 1/2$

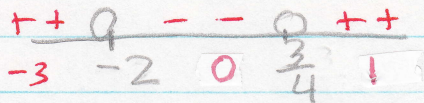
2: + + + - -

4: + + + - -

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3b $4x^2 + 5x - 6 < 0$
 $x \quad +2$
 $4x \quad -3$

$(x+2)(4x-3) < 0$



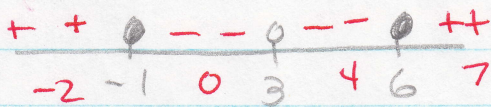
-3: - - - - -> +

0: + - - - -> -

1: + + - - -> +

$-2 < x < \frac{3}{4}$

3d $\frac{(x-6)(x+1)}{(x-3)^2} \leq 0$



numerator has to be zero
 denominator can never be zero

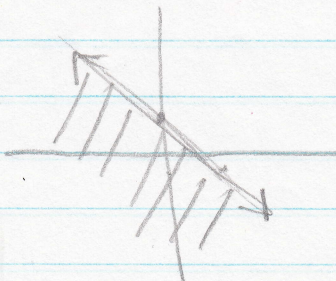
7: $\frac{+}{+} \rightarrow +$; 4: $\frac{-}{+} \rightarrow -$

0: $\frac{-}{+} \rightarrow -$; -2: $\frac{-}{+} \rightarrow +$

$-1 \leq x < 3$ or $3 < x \leq 6$

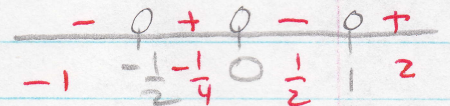
or $-1 \leq x \leq 6$; $x \neq 3$

5. $2-3y > 3x$
 $-3y > 3x-2$
 $y \leq -x + \frac{2}{3}$



3c $2x^3 - x^2 > x$
 $2x^3 - x^2 - x > 0$
 $x(2x^2 - x - 1) > 0$
 $2x + 1$
 $x - 1$

$x(2x+1)(x-1) > 0$



2: + + + - -> +

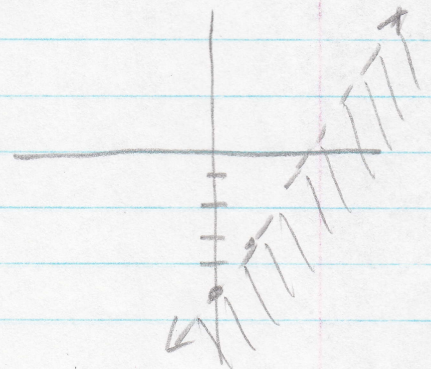
1/2: + + - - -> -

-1/4: - + - - -> +

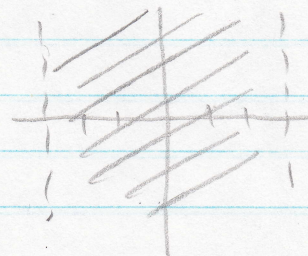
-1: - - - - -> -

$x > 1$ or $-\frac{1}{2} < x < 0$

4 $y < 2x - 5$



6 $|x| < 3 \rightarrow -3 < x < 3$



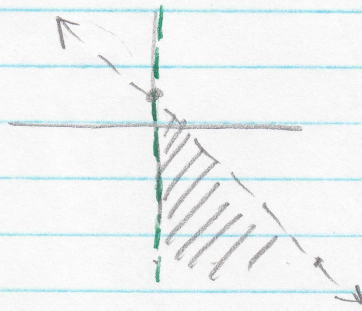
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6. $x > 0$

$3x + 4y < 2$

$4y < -3x + 2$

$y < -\frac{3}{4}x + \frac{1}{2}$

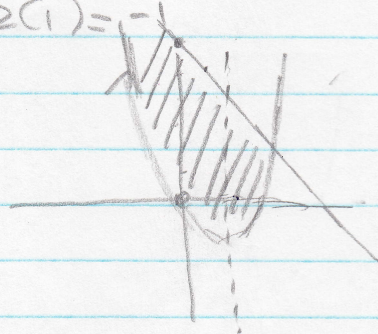


6b $y > x^2 - 2x$

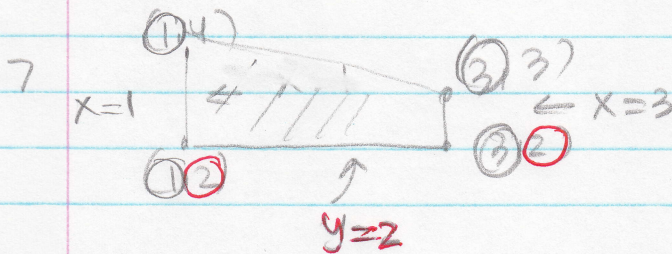
AOS: $x = \frac{-(-2)}{2(1)} = 1$; $y = 1^2 - 2(1) = -1$

vertex (1, -1)

x	y
0	0
2	0



$y \leq 6 - x$



(1, 4) (3, 3)

$m = \frac{3-4}{3-1} = -\frac{1}{2}$

$y - 4 = -\frac{1}{2}(x - 1)$

$2y - 8 = -x + 1$

$2y = -x + 9$

$y = -\frac{1}{2}x + \frac{9}{2}$

① $x > 1$

② $x \leq 3$

③ $y > 2$

④ $y \leq -\frac{1}{2}x + \frac{9}{2}$

or $1 \leq x \leq 3$

$y > 2$

$y \leq -\frac{1}{2}x + \frac{9}{2}$

⑧

cars

shop 1

$3x$

shop 2

$4x$

P: $500y + 350x$

trucks

$6y$

$4y$

$x + y = 30$

$\frac{150}{}$

$\frac{120}{}$

$-x - 2y = -50$

$-y = -20$

$3x + 6y \leq 150$

$4x + 4y \leq 120$

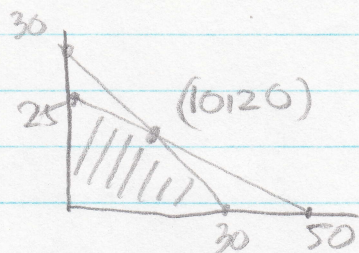
$y = 20$

$x + 2y \leq 50$

$x + y \leq 30$

$x = 10$

$x > 0$ $y > 0$



$$(10, 20) \rightarrow 500(20) + 350(10) = 13150$$

$$(0, 0) \rightarrow 0$$

$$(0, 25) \rightarrow 500(25) + 350(0) = 12500$$

$$(30, 0) \rightarrow 500(0) + 350(30) = 10500$$

$$\text{Max} = \$131500$$

occurs when x (cars) = 10 &

y (trucks) = 20

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#13 $|x| < -8$ no solution. Absolute value has to be positive

#14 $|x| > -2$ the absolute value of a # is always positive so it must always be > -2
 \rightarrow all real #s