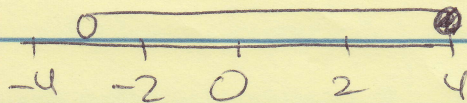


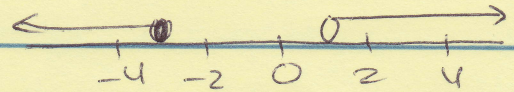
chapter 3 Review

① $-3 < x \leq 4$



note the scale

② $x \leq -3$ or $x > 1$



③ $|2x - 7| \leq 10$

$$-10 < 2x - 7 \leq 10$$

$$-3 \leq 2x \leq 17$$

$$-\frac{3}{2} \leq x \leq \frac{17}{2}$$

④ $|5x - 4| \geq 19$

$$5x - 4 \geq 19 \quad \text{OR} \quad 5x - 4 \leq -19$$

$$5x \geq 23 \quad \text{OR} \quad 5x \leq -15$$

$$x \geq \frac{23}{5} \quad \text{OR} \quad x \leq -3$$

⑤ $\frac{5 - 2x}{-7} > 3$

multiply by -7

switch inequality

$$5 - 2x < -21$$

$$-2x < -26$$

Divide by -2 → switch inequality

$$x > 13$$

⑥ $1 < |2x - 19| < 5$

$$|2x - 19| > 1$$

AND

$$|2x - 19| < 5$$

$$2x - 19 > 1 \quad \text{OR} \quad 2x - 19 < -1$$

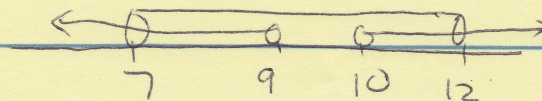
$$-5 < 2x - 19 < 5$$

$$2x > 20 \quad \text{OR} \quad 2x < 18$$

$$14 < 2x < 24$$

$$x > 10 \quad \text{OR} \quad x < 9$$

$$7 < x < 12$$

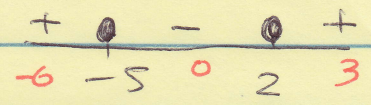


$$7 < x < 9 \quad \text{OR} \quad 10 < x < 12$$

TMA Ch3 Review

7. $x^2 + 3x - 10 \leq 0$
 $(x+5)(x-2) \leq 0$

3: ++ → (+)
 0: +- → (-)
 -6: -- → (+)



$-5 \leq x \leq 2$

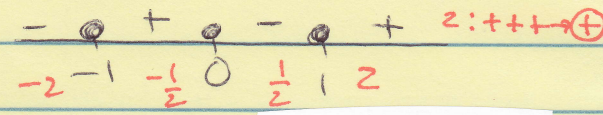
8. $x^3 > x$

$x^3 - x > 0$

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

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

-2: --- → (-)
 -1/2: -+ → (+)
 1/2: ++ → (+)

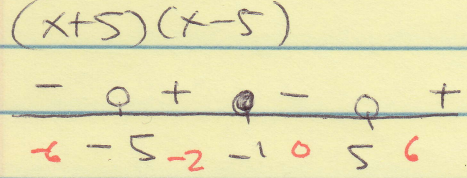


$-1 < x < 0$ or $x > 1$

9. $\frac{x+1}{x^2-25} > 0$

-6: - → (-)
 -2: -+ → (+)
 0: +- → (-)
 6: ++ → (+)

$\frac{x+1}{(x+5)(x-5)} > 0$



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

10. $(x+2)(x-1)^2(x-3) < 0$

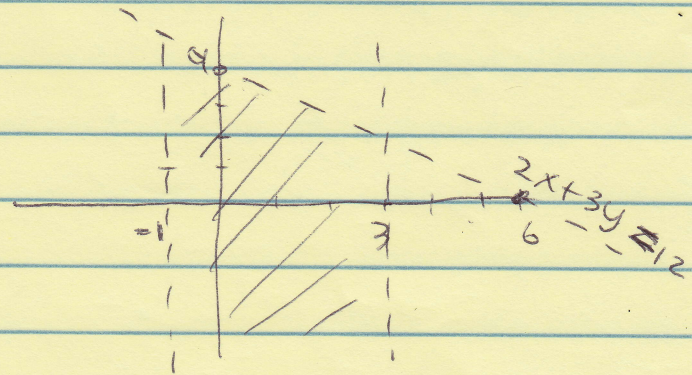
4: +++ → (+)
 2: ++ → (+)
 0: +- → (-)
 -3: -+ → (+)

$-2 < x < 1$ or $1 < x < 3$

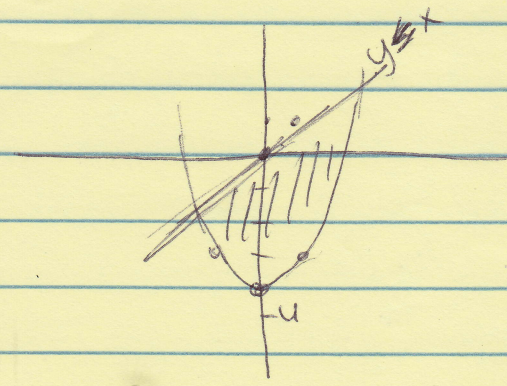
-3: -+ → (+)

11. y int = -5
 $m = 1$
 shade below
 dashed line
 $y < x - 5$

12



13.



$y \geq x^2 - 4$ parabola (solid)

vertex (0, -4)

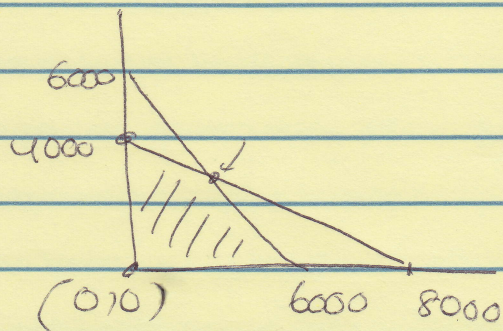
x	y
1	-3

shade above vertex
 inside parabola

	Vol	weight	objective
Medical kit	$1x$	$10x$	$4x$
Water	$1y$	$20y$	$10y$
	6000	80000	

$$C = 4x + 10y$$

Constraints: $x + y \leq 6000$; $x \geq 0$; $y \geq 0$
 $10x + 20y \leq 80000$



$$(x + y = 6000) \quad -10$$

$$10x + 20y = 80000$$

$$-10x - 10y = -60000$$

$$10y = 20,000$$

$$y = 2000$$

$$x + 2000 = 6000$$

$$x = 4000$$

Vertices:

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

$$(0,4000) \rightarrow 40,000$$

$$(4000,2000) \rightarrow 36,000$$

$$(6000,0) \rightarrow 24,000$$

Maximum = 40,000 and it occurs at (0,4000)

By getting 4000 cubic feet of water, they will help 40,000 people