Section 1.6 Notes

I can solve a linear inequality and write my solutions with a graph and interval notation

18. $6 - x \geq 2x + 9$

28. $1 < 3x + 4 \leq 16$

I can solve and graph a nonlinear inequality with a product and write my solutions with a graph and interval notation

Guidelines for Solving Nonlinear Inequalities:

1-

2-

3-

4-

5-

34. $(x - 5)(x + 4) \geq 0$

42. $5x^2 + 3x \geq 3x^2 + 2$

I can solve and graph a nonlinear inequality with a quotient and write my solutions with a graph and interval notation

52. $\frac{2x+6}{x-2} < 0$

54. $-2 < \frac{x+1}{x-3}$

Section 1.7

I know the properties of absolute value inequalities and can use them to solve an absolute value inequality

I can solve an absolute value equation

6. $|2x - 3| = 7$

8. $|x + 4| = -3$

24. $|x - 9| > 9$

30. $|5x - 2| < 6$

36. $3 - |2x + 4| \leq 1$

Section 1.6 Notes

I can solve a linear inequality and write my solutions with a graph and interval notation

18. $6 - x \geq 2x + 9$

$6 - 3x \geq 9$

$-3x \geq 3$

$x \leq -1$

$(-\infty, -1]$

28. $1 < 3x + 4 \leq 16$

$-3 < 3x \leq 12$

$-1 \leq x \leq 4$

$[-1, 4]$

I can solve and graph a nonlinear inequality with a product and write my solutions with a graph and interval notation

Guidelines for Solving Nonlinear Inequalities:

1- Move all terms to one side
   a. Set equal to zero
   b. If non-zero side involves quotients combine w/ common den:

2- Factor non-zero side

3- Find the intervals (critical points)

4- Make table or diagram

5- Solve and graph

34. $(x-5)(x+4) \geq 0$

$x - 5 = 0 \quad x + 4 = 0$

$x = +5 \quad x = -4$

$(-\infty, -4] \cup [5, \infty)$

42. $5x^2 + 3x \geq 3x^2 + 2$

$2x^2 + 3x - 2 \geq 0$

$(2x-1)(x+2) \geq 0$

	$(2x-1)$	$(x+2)$	
-3	$-$	$-$	$+$
0	$-$	$+$	$-$
	$+$	$+$	$+$

$(-\infty, -2] \cup [\frac{1}{2}, \infty)$

I can solve and graph a nonlinear inequality with a quotient and write my solutions with a graph and interval notation

52. $\frac{2x+6}{x-2} < 0$

$\frac{2(x+3)}{(x-2)} < 0$

	$x+3$	$x-2$	
-4	$-$	$-$	$+$
0	$+$	$-$	$-$
3	$+$	$+$	$+$

$[-3, 2)$

54) $-2 < \frac{x+1}{x-3}$

$\frac{x+1}{x-3} + 2 > 0$

$\frac{x+1}{x-3} + \frac{2(x-3)}{(x-3)} > 0$

$\frac{x+1+2x-6}{x-3} > 0$

$\frac{3x-5}{x-3} > 0$

	$3x-5$	$x-3$	
0	$-$	$-$	$+$
2	$+$	$-$	$-$
4	$+$	$+$	$+$

$(-\infty, 5/3] \cup (3, \infty)$

Section 1.7

I know the properties of absolute value inequalities and can use them to solve an absolute value inequality

$|x-b| = k$

$x-b=k \quad x-b=-k$

I can solve an absolute value equation (Interval notation)

6. $|2x-3|=7$

$2x-3=7 \quad 2x-3=-7$

$2x=10 \quad 2x=-4$

$x=5 \quad x=-2$

8. $|x+4|=-3$

no solution

24. $|x-9|>9$

$x-9>9 \quad x-9<-9$

$x>18 \quad x<0$

$(-\infty,0)\cup(18,\infty)$

30. $|5x-2|<6$

$5x-2<6 \quad 5x-2>-6$

$5x<8 \quad 5x>-4$

$x<8/5 \quad x>-\frac{4}{5}$

$(-\infty,-4/5)\cup(\frac{8}{5},\infty)$

36. $3-|2x+4|\le 1$

$-|2x+4|\le -2$

$|2x+4|\ge 2$

$2x+4\ge 2 \quad 2x+4\le -2$

$2x\ge -2 \quad 2x\le -6$

$x\ge -1 \quad x\le -3$

$(-\infty,-3]\cup[-1,\infty)$

Absolute value inequalities

$|ax+b|<c$

$ax+b<c \quad -(ax+b)<c$

$ax+b>-c$

$\boxed{-c<ax+b<c}$

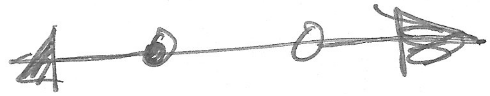
less than and

$ax+b>c$

$ax+b>c \quad -(ax+b)>c$

$ax+b>c \quad ax+b<-c$

or



greater than or

Practice Homework:
Section 1.6

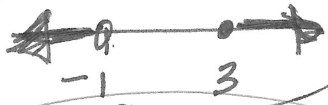
37. $x^2 - 3x - 18 \leq 0$

$(x-6)(x+3) \leq 0$

$[-3, 6]$

	$(x-6)$	$(x+3)$	
-4	−	−	+
0	−	+	−
7	+	+	+

51. $\frac{x-3}{x+1} \geq 0$



$(-\infty, -1) \cup [3, \infty)$

	$x-3$	$x+1$	
-2	−	−	+
0	−	+	−
4	+	+	+

Section 1.7

9. $|4x + 7| = 9$

$4x+7 = 9$ $\quad$ $4x+7 = -9$

$4x = 2$ $\quad$ $4x = -16$

$x = \frac{1}{2}$ $\quad$ $x = -4$

25. $|x + 1| \geq 1$

$x+1 \geq 1$ $\quad$ $x+1 \leq -1$

$x \geq 0$ $\quad$ $x \leq -2$

$(-\infty, -2] \cup [0, \infty)$

35. $4|x + 2| - 3 < 13$

$4|x+2| < 16$

$|x+2| < 4$

$x+2 < 4$ $\quad$ $x+2 > -4$

$x < 2$ $\quad$ $x > -6$

$(-6, 2)$