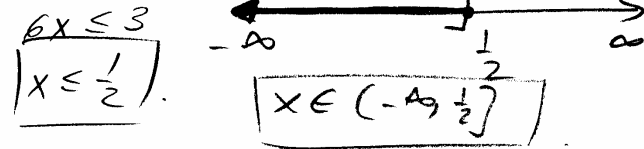


SECTION 1.7

(22)  $\frac{2x-5}{-8} \leq 1-x \quad | \cdot (-8)$

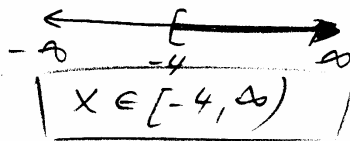
$2x-5 > -8(1-x)$   
 $2x-5 > -8+8x$   
 $-5+8 > 8x-2x$   
 $3 > 6x$



(24)  $\frac{2}{3}x - \frac{1}{6}x + \frac{2}{3}(x+1) \leq \frac{2}{3}$

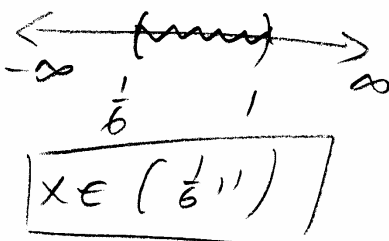
LCD = 6

$-4x - x + 4(x+1) \leq 8$   
 $-4x - x + 4x + 4 \leq 8$   
 $-x + 4 \leq 8$   
 $-x \leq 4 \quad | \cdot (-1)$   
 $x \geq -4$



(30)  $4 > -6x+5 > -1$   
 $-5 \quad -5 \quad -5$   
 $-1 > -6x > -6 \quad | \cdot (-1)$   
 $1 < 6x < 6 \quad | \div 6$

$\frac{1}{6} < x < 1$

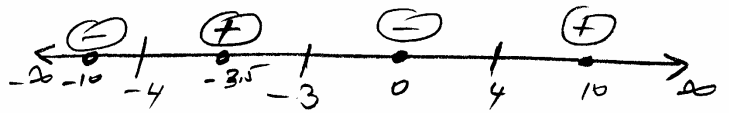


(66)  $x^3 + 3x^2 - 16x - 48 \leq 0$

$x^2(x+3) - 16(x+3) \leq 0$

$(x+3)(x^2-16) \leq 0$

$(x+3)(x+4)(x-4) \leq 0$



TEST POINTS:  
 $x = -10 \quad (-)(-)(-) = (-)$   
 $x = -3.5 \quad (-)(+)(-) = (+)$   
 $x = 0 \quad (+)(+)(-) = (-)$   
 $x = 10 \quad (+)(+)(+) = (+)$

$x \in (-\infty, -4] \cup [-3, 4]$

(77)  $\frac{10}{3+2x} \leq 5$

$\frac{10}{3+2x} - 5 \leq 0$

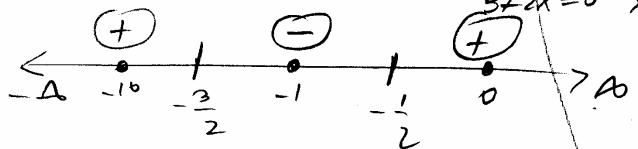
$\frac{10 - 5(3+2x)}{3+2x} \leq 0$

$\frac{10 - 15 - 10x}{3+2x} \leq 0$

$\frac{-5 - 10x}{3+2x} \leq 0$

$\frac{-5(1+2x)}{3+2x} \leq 0 \iff \frac{1+2x}{3+2x} \geq 0$

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



TP:  $x = -10 \quad \frac{(-)}{(-)} = (+)$   
 $x = -1 \quad \frac{(-)}{(-)} = (+)$   
 $x = 0 \quad \frac{(+)}{(+)} = (+)$

$x \in (-\infty, -\frac{3}{2}) \cup [-\frac{1}{2}, \infty)$

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

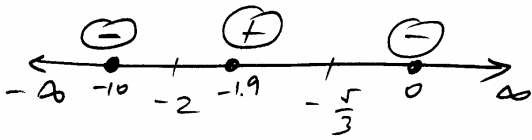
$\frac{1}{x+2} - 3 > 0$

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

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

$\frac{-5-3x}{x+2} > 0$

$-5-3x=0 \Rightarrow x = -\frac{5}{3}$   
 $x+2=0 \Rightarrow x = -2$



TP:  $x = -10 \quad \frac{(-)}{(-)} = (+)$

$x = -1.9 \quad \frac{(+)}{(+)} = (+)$

$x = 0 \quad \frac{(-)}{(+)} = (-)$

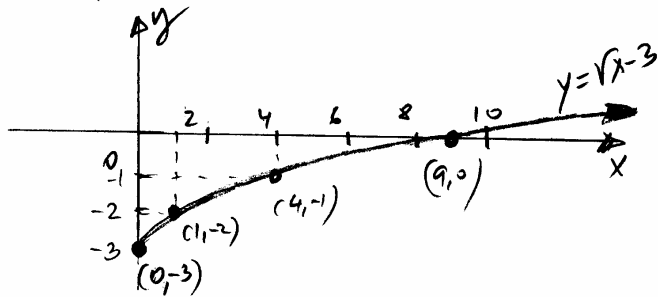
$\therefore x \in (-2, -\frac{5}{3}]$

SECTION 2.1

(40) Graph  $y = \sqrt{x} - 3$

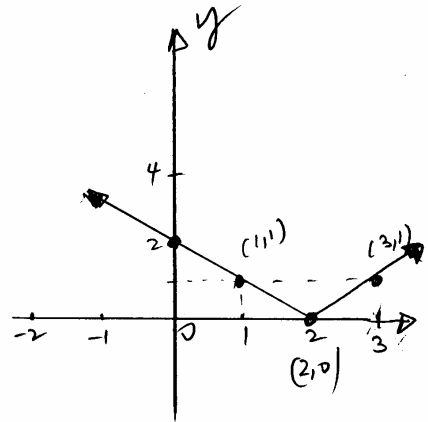
Domain:  $x \geq 0$

x	y
0	-3
1	-2
4	-1
9	0



(41)  $y = |x-2|$

x	y
-2	4
-1	3
0	2
1	1
2	0
3	1



(61)  $4x^2 + 4x + 4y^2 - 16y - 19 = 0 \quad | : 4$   
 $x^2 + x + (\frac{1}{4}) + y^2 - 4y + (4) = \frac{19}{4} + (\frac{1}{4}) + (4)$

$(\frac{1}{2} \text{ of } x)^2 = \frac{1}{4} \quad (\frac{1}{2} \text{ of } y)^2 = (\frac{1}{2} \cdot 4)^2 = 4$

$(x + \frac{1}{2})^2 + (y - 2)^2 = \frac{20}{4} + 4$

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

Circle with center  $(-\frac{1}{2}, 2)$   
 radius  $r = \sqrt{9} = 3$

SECTION 2.3

(72) (a) (1912, 14.6)  
 (1996, 13.1)

$m = \frac{\Delta y}{\Delta x} = \frac{14.6 - 13.1}{1912 - 1996} = -0.0179$

$m = -0.0179$  min per year.  
 The winning time decreased  
 on average of 0.0179 min  
 each event year from 1912  
 to 1996.