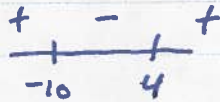


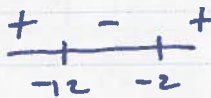
9.2 pg 485 4-9

4a)  $x^2 + 6x - 40 \geq 0$   
 $(x+10)(x-4) \geq 0$



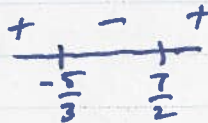
$x \leq -10$  OR  $x \geq 4$   
 $(-\infty, -10] \cup [4, \infty)$

b)  $x^2 + 14x + 24 > 0$   
 $(x+12)(x+2) > 0$



$(-\infty, -12) \cup (-2, \infty)$   
 ↑ ↑  
 Curved

c)  $6x^2 - 11x - 35 > 0$   
 $(3x+5)(2x-7) > 0$



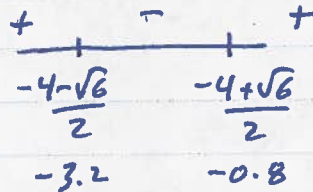
$(-\infty, -\frac{5}{3}) \cup (\frac{7}{2}, \infty)$

d)  $2x^2 + 8x + 5 \leq 0$   
 $(2x \quad)(x \quad)$  doesn't factor

$x = \frac{-8 \pm \sqrt{64 - 4(2)(5)}}{4}$

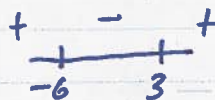
$x = \frac{-8 \pm \sqrt{24}}{4}$

$x = \frac{-8 \pm 2\sqrt{6}}{4} = \frac{-4 \pm \sqrt{6}}{2}$



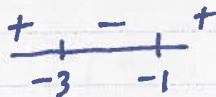
$[-\frac{4-\sqrt{6}}{2}, \frac{-4+\sqrt{6}}{2}]$

5a)  $x^2 + 3x - 18 \leq 0$   
 $(x+6)(x-3) \leq 0$



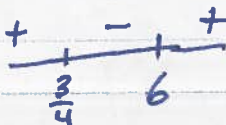
$[-6, 3]$

b)  $x^2 + 4x + 3 \geq 0$   
 $(x+1)(x+3) \geq 0$



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

c)  $4x^2 - 27x + 18 < 0$   
 $(4x-3)(x-6) < 0$



$(\frac{3}{4}, 6)$

d)  $0 \geq x^2 + 6x - 16$   
 $0 \geq (x+8)(x-2)$

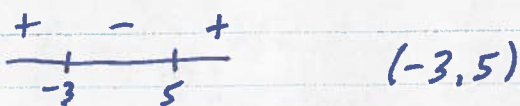


$[-8, 2]$

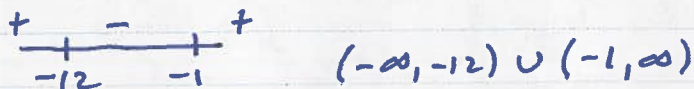
Hilroy

pg 485

6. a)  $x^2 - 2x - 15 < 0$   
 $(x+3)(x-5) < 0$



b)  $x^2 + 13x + 12 > 0$   
 $(x+1)(x+12) > 0$

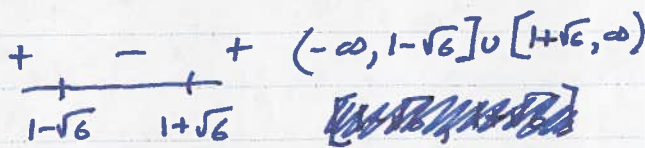


c)  $x^2 - 2x - 5 \geq 0$

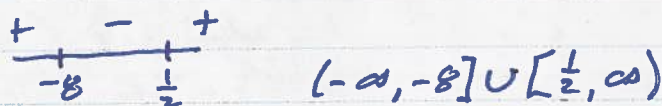
doesn't factor

$$x = \frac{2 \pm \sqrt{4 + 20}}{2}$$

$$x = \frac{2 \pm 2\sqrt{6}}{2} = 1 \pm \sqrt{6}$$



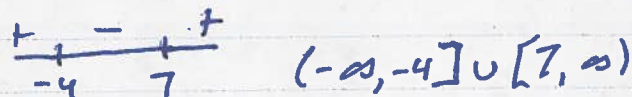
d)  $2x^2 + 15x - 8 \geq 0$   
 $(2x-1)(x+8) \geq 0$



7 a)  $x^2 + 14x + 48 \leq 0$   
 $(x+6)(x+8) \leq 0$



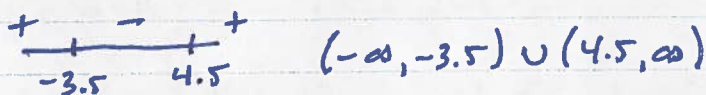
b)  $x^2 - 3x - 28 \geq 0$   
 $(x-7)(x+4) \geq 0$



c)  $7x^2 - x + 6 \leq 0$   
~~doesn't factor~~  
 doesn't factor



d)  $4x^2 - 4x - 63 > 0$   
 $(2x+7)(2x-9) > 0$



$b^2 - 4ac = -167$  no roots

vertex  $\frac{1}{14}, \frac{167}{28}$

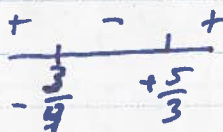
vertex above axis, concave up  
 $\therefore$  no solution  
 (never  $\leq 0$ )

8. a)  $x^2 - 10x + 16 < 0$   
 $(x-8)(x-2) < 0$



(2, 8)

b)  $12x^2 - 11x - 15 \geq 0$   
 $(4x+3)(3x-5) \geq 0$



$(-\infty, -\frac{3}{4}] \cup [\frac{5}{3}, \infty)$

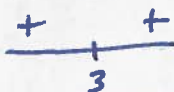
c)  $x^2 - 2x - 12 \leq 0$   
 $x = \frac{2 \pm \sqrt{4+48}}{2}$



$x = \frac{2 \pm \sqrt{52}}{2} \quad \frac{2 \pm 2\sqrt{13}}{2} \quad 1 \pm \sqrt{13}$

$[1-\sqrt{13}, 1+\sqrt{13}]$

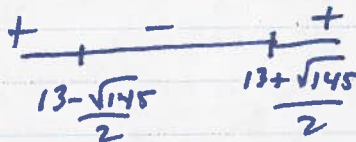
d)  $x^2 - 6x + 9 > 0$   
 $(x-3)(x-3) > 0$



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

\*  $x \neq 3$  is a nice way to write this

9. a)  $x^2 - 13x + 6 \leq 0$   
 $x = \frac{13 \pm \sqrt{169-24}}{2}$   
 $x = \frac{13 \pm \sqrt{145}}{2}$



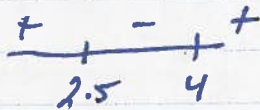
$[\frac{13-\sqrt{145}}{2}, \frac{13+\sqrt{145}}{2}]$

b)  $x^2 + 10x - 24 > 0$   
 $(x+12)(x-2) > 0$



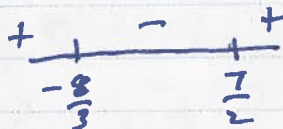
$(-\infty, -12) \cup (2, \infty)$

c)  $0 < 2x^2 - 13x + 20$   
 $0 < (2x-5)(x-4)$



$(-\infty, 2.5) \cup (4, \infty)$

d)  $-3x^2 - 12 \leq 3x^2 - 5x - 68$   
 $0 \leq 6x^2 - 5x - 56$   
 $0 \leq (3x+8)(2x-7)$



$(-\infty, -\frac{8}{3}] \cup [\frac{7}{2}, \infty)$

Do 10, 12, 13, 15, 16, 17 pgs 485-487



9.2 10, 12, 13, 15, 16, 17

10a)  $9h^2 \geq 750$   
 $h^2 \geq \frac{750}{9}$   
 $h^2 - \frac{750}{9} \geq 0$

$$\begin{array}{c} - \quad + \\ | \quad | \\ -\frac{\sqrt{750}}{3} \quad \frac{\sqrt{750}}{3} \\ \left[ \frac{5\sqrt{30}}{3}, \infty \right) \end{array}$$

$h \geq \frac{5\sqrt{30}}{3} \text{ cm}$   
 $h > 9.1 \text{ cm}$

b)  $9h^2 \geq 1500$   
c)  $h^2 \geq \frac{1500}{9}$   
 $h^2 - \frac{1500}{9} \geq 0$

$$\begin{array}{c} - \quad + \\ | \quad | \\ -\frac{\sqrt{1500}}{3} \quad \frac{\sqrt{1500}}{3} \\ \left[ \frac{10\sqrt{15}}{3}, \infty \right) \end{array}$$

$h \geq \frac{10\sqrt{15}}{3} \text{ cm}$   
 $h > 12.9 \text{ cm}$

d) not a linear relationship (2 times heavier  
 $\sqrt{2}$  times thickness)

12 a)  $-t^2 + 14 \leq 10$   
 $-t^2 + 4 \leq 0$   
 $t^2 - 4 \geq 0$   
 $(t+2)(t-2) \geq 0$

$$\begin{array}{c} + \quad - \quad + \\ | \quad | \\ -2 \quad 2 \end{array}$$

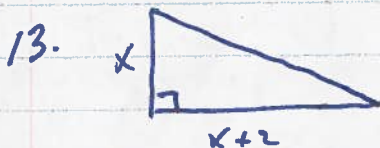
$[2, \infty)$   
after 2 years

b) negative time

c)  $-t^2 + 14 \leq 5$   
 $-t^2 + 9 \leq 0$   
 $t^2 - 9 \geq 0$   
 $(t-3)(t+3) \geq 0$

$$\begin{array}{c} + \quad - \quad + \\ | \quad | \\ -3 \quad 3 \end{array}$$

$[3, \infty)$   
after 3 years



$\frac{1}{2}x(x+2) \geq 4$   
 $\frac{1}{2}x^2 + x - 4 \geq 0$   
 $x^2 + 2x - 8 \geq 0$   
 $(x+4)(x-2)$

$$\begin{array}{c} + \quad - \quad + \\ | \quad | \\ -4 \quad 2 \end{array}$$

$x \geq 2$   
shorter leg  $\geq 2$

15 a)  $x = -2$   $x = 7$   
 $x+2$   $x-7$   
 $(x+2)(x-7)$   
 $x^2 - 5x - 14 \leq 0$

b)  $(x-1)(x-10)$   
 $x^2 - 11x + 10 \geq 0$

c)  $(3x-5)(x-6)$   
 $3x^2 - 23x + 30 \leq 0$

d)  $(4x+3)(5x+1)$   
 $20x^2 + 19x + 3 \geq 0$

e)  $(x+(3+\sqrt{7}))(x+(3-\sqrt{7}))$   
 $x^2 + 6x + 2 \geq 0$

g)  $x^2 + 1 \leq 0$

f)  $x^2 + 1 > 0$

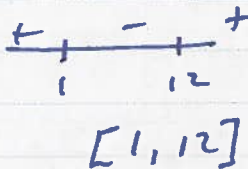
16  $|x^2 - 4| \geq 2$   $x^2 - 4 \geq 2$  OR  $x^2 - 4 \leq -2$   
 $x^2 - 6 \geq 0$   $x^2 - 2 \leq 0$

$(-\infty, -\sqrt{6}] \cup [-\sqrt{2}, \sqrt{2}] \cup [\sqrt{6}, \infty)$

17.a)  $-1 \leq x \leq 12$  represents the region between the graphs of  $-x^2 + 12x + 16$  and  $-x + 28$

b)  $-x^2 + 13x - 12 \geq 0$

c)  $x^2 - 13x + 12 \leq 0$   
 $(x - 12)(x - 1) \leq 0$



d) same system