

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

a.  $f(4) = \frac{1}{4-2}$   
 $= \frac{1}{2}$

b.  $\frac{1}{1} \times \frac{1}{x-2}$  Cross multiply

$x-2 = 1$

$x = 3$

5.  $g(x) = \sqrt{x-5}$ ,  $h(x) = x^2 - 6$

a. let  $x = 6$

$h(6) = 6^2 - 6 = 30$

$g(30) = \sqrt{30-5} = \sqrt{25} = 5$

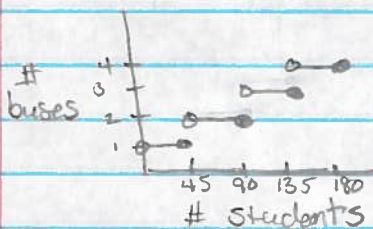
h(x), then g(x)

b.  $g(6) = \sqrt{6-5} = \sqrt{1} = 1$

$h(1) = 1^2 - 6 = 1 - 6 = -5$

yes g(x), then h(x)

6. This is a step function



7. a.  $y = -2x + 7$



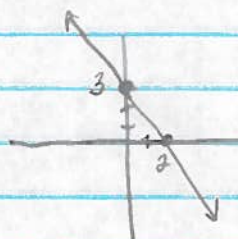
b.  $y = \frac{3}{5}x + 1$



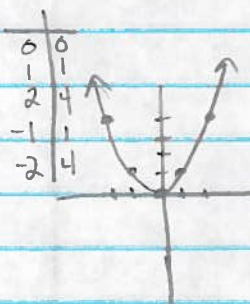
c.  $3x + 2y = 6$

$2y = -3x + 6$

$y = -\frac{3}{2}x + 3$



d.  $y = x^2$



8. a. It is not linear  
b. the  $x$  is squared  
c. Parabola

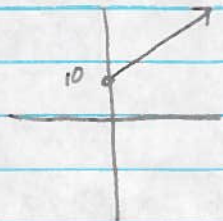
9.  $y = mx + b$

The graph is a line. The eq'n is in slope-intercept form. The "m" represents slope and "b" represents the y-intercept. X and Y represent an ordered pair for every point on the line.

Lesson 1.1.2 Day 1 p. 11-12: 12-18

12.

0	10
1	12
2	14
3	16



$$y = 2x + 10$$

13a.  $(x+13)(x-7) = 0$

$$\begin{matrix} \downarrow & \downarrow \\ \boxed{x = -13} & \boxed{x = 7} \end{matrix}$$

13b.  $(2x+3)(3x-7) = 0$

$$\begin{matrix} \downarrow & \downarrow \\ \boxed{x = -\frac{3}{2}} & \boxed{x = \frac{7}{3}} \end{matrix}$$

13c.  $x(x-3) = 0$

$$\begin{matrix} \downarrow & \downarrow \\ \boxed{x = 0} & \boxed{x = 3} \end{matrix}$$

13d.  $x^2 - 5x = 0$  gcf = x

$$\begin{matrix} x(x-5) = 0 \\ \downarrow & \downarrow \\ \boxed{x = 0} & \boxed{x = 5} \end{matrix}$$

13e.  $x^2 - 2x - 35 = 0$

$$\begin{matrix} -7 & -7x & -35 \\ x & x^2 & 5x \\ x & 5 & \end{matrix} \quad \begin{matrix} -35x^2 \\ -7x & 5x \\ -2x \end{matrix}$$

$$(x-7)(x+5) = 0$$

$$\boxed{x = 7} \quad \boxed{x = -5}$$

13f.  $3x^2 + 14x - 5 = 0$

$$\begin{matrix} 5 & 15x & -5 \\ x & 3x^2 & 14x \\ 3x & -1 & \end{matrix} \quad \begin{matrix} -15x^2 \\ 15x & -1x \\ 14x \end{matrix}$$

$$(x+5)(3x-1) = 0$$

$$\boxed{x = -5} \quad \boxed{x = \frac{1}{3}}$$

14.  $x \mid y$

7	[ 3   8 ] <sub>21</sub>
10	[ 10   29 ] <sub>30</sub>
10	[ 20   59 ] <sub>30</sub>

$$m = \frac{21}{7} = 3$$

$$m = \frac{30}{10} = 3$$

$$y = mx + b$$

$$8 = 3(7) + b$$

$$8 = 21 + b$$

$$b = -1$$

$$y = 3x - 1$$

5	14
-1	-4
x	3x-1

15a.  $m=5, (0, -2)$

$$y = mx + b$$
$$y = 5x - 2$$

15b.  $0 = 5x - 2$

$$2 = 5x$$
$$x = \frac{2}{5}$$

16a.  $y = 3x + 15$

2	21
0	15

y-int = (0, 15)

16b.  $y = 3 - 3x$

2	-3
0	3

y-int = (0, 3)

17a.  $(3)^2 + 2(3) + 1 = 9 + 6 + 1 = 16$

17b.  $(-4)^2 + 2(-4) + 1 = 16 - 8 + 1 = 9$

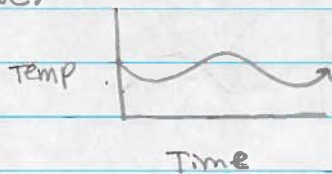
17c.  $(-22.872)^2 + 2(-22.872) + 1 = 478.38$

18a.  $y$  depends on  $x$ ;  $x$  is the independent variable

18b. Temperature is dependent

Time is independent

18c.

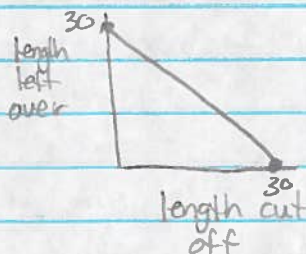


Lesson 1.1.2 (Day 2) p. 12-14: 19-25

19. Table

0	30
1	29
2	28
⋮	
29	1
30	0

Graph

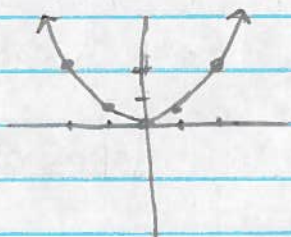


Eq'n

$$y = 30 - x$$

20.  $f(x) = \frac{1}{2}x^2$

0	0
1	$\frac{1}{2}$
2	2
-1	$\frac{1}{2}$
-2	2



Input: All  $x$  values ( $\mathbb{R}$ )  
Output: All  $y$  values  $\geq 0$

21a.  $f(3) = \frac{-2}{3}(3) + 3 = -2 + 3 = \boxed{1}$

21b.  $-5 = \frac{-2}{3}x + 3$

$$\frac{3}{-2} \cdot -8 = \frac{-2}{2}x \cdot \frac{3}{2}$$

$$\boxed{12 = x}$$

21c.  $g(-3) = 2(-3)^2 - 5 = 2(9) - 5$

$$= 18 - 5$$

$$= \boxed{13}$$

21d.  $-7 = 2x^2 - 5$

$$-2 = 2x^2$$

$$\sqrt{x^2} = \sqrt{-1}$$

**No solution**

21e.  $8 = 2x^2 - 5$

$$13 = 2x^2$$

$$\sqrt{x^2} = \sqrt{6.5}$$

$$\boxed{x = \pm 2.55}$$

21f.  $9 = 2x^2 - 5$

$$14 = 2x^2$$

$$\sqrt{x^2} = \sqrt{7}$$

$$\boxed{x = \pm 2.65}$$

$$22. (-1)^3 = -1, (3)^3 = 27, (-2)^3 = -8, (0)^3 = 0$$

$$\text{So, } \boxed{f(x) = x^3}$$

23a. the more gas you buy, the more money you spend

I: Gallons of gas      D: money

23b. A person grows a lot when young, then levels off

I: Age      D: Height

23c. Levels of ozone concentration decreases each year

I: year      D: Ozone concentration

23d. # classrooms  $\uparrow$  when # students  $\uparrow$ . Each classroom holds 30 students

I: # students      D: # classrooms

24.  $\triangle ABC \sim \triangle ADE$  by AA

$$24a. \boxed{\frac{n}{m}}$$

$$24b. \boxed{\frac{m}{x}}$$

$$25. \overbrace{3(x-2)} - \overbrace{2(x+7)} = 2x+17$$

$$\underline{3x-6} - \underline{2x-14} = 2x+17 \quad \leftarrow \text{Error in distributing } -2 \dots$$

$$\cancel{x} - 20 = 2x + 17$$

$$-20 = x + 17$$

$$\boxed{-37 = x}$$

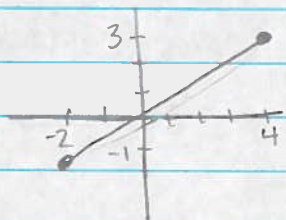
should get -14

34 a. Domain:  $-2 \leq x \leq 4$

b. Range:  $-1 \leq y \leq 3$

c. No b/c he doesn't include all of the #'s between these integers... the graph is continuous

d. Answers will vary



35a.  $f(5) = 3(5)^2 - 5$   
 $3(25) - 5$   
 $75 - 5$   
 $\boxed{70}$

35b.  $g(5) = \sqrt{5-5} + 2$   
 $= \sqrt{0} + 2$   
 $= \boxed{2}$

35c.  $f(4) = 3(4)^2 - 5$   
 $= 3(16) - 5$   
 $= 48 - 5$   
 $= \boxed{43}$

35d.  $g(4) = \sqrt{4-5} + 2$   
 $= \sqrt{-1} + 2$   
 $= \boxed{\text{undefined}}$

35e.  $f(x) + g(x) = 3x^2 - 5 + \sqrt{x-5} + 2$   
 $= \boxed{3x^2 + \sqrt{x-5} - 3}$   
 Combine like terms

35f.  $g(x) - f(x) = \sqrt{x-5} + 2 - (3x^2 - 5)$  ← use ( ) here  
 $= \sqrt{x-5} + 2 - 3x^2 + 5$  ← combine like terms  
 $= \boxed{-3x^2 + \sqrt{x-5} + 7}$

35g. Domain: all real numbers  
 ( $\mathbb{R}$  or  $-\infty \leq x \leq \infty$ )

35h. all reals  $\geq 5$   
 (or  $x \geq 5$ )

35i. b/c the square root of a neg # does not exist, so some x-values can't be part of the domain.

36. Chelita made an error in factoring  
 $x^2 - 10x + 21 = 0$

-7	-7x	21
x	x <sup>2</sup>	-3x
x	-3	

~~$$\begin{array}{r} 2x^2 \\ -7x \quad -3x \\ \hline -10x \end{array}$$~~

$$(x-7)(x-3) = 0$$

$$\boxed{x=7} \quad \boxed{x=3}$$

37a.  $x = 3y + 6$

$$x - 6 = 3y$$

$$\boxed{y = \frac{x-6}{3}}$$

37b.  $x = 5y - 10$

$$x + 10 = 5y$$

$$\boxed{y = \frac{x+10}{5}}$$

37c.  $\sqrt{x} = \sqrt{y^2}$

$$\boxed{y = \pm \sqrt{x}}$$

37d.  $x = 2y^2 - 4$

$$x + 4 = 2y^2$$

$$\sqrt{y^2} = \sqrt{\frac{x+4}{2}}$$

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

37e.  $\sqrt{x} = \sqrt{(y-5)^2}$

$$y - 5 = \pm \sqrt{x}$$

$$\boxed{y = 5 \pm \sqrt{x}}$$

38a.  $f(0) = 2(0) - 7 = \boxed{-7}$

38b.  $0 = 2x - 7$

$$7 = 2x$$

$$\boxed{x = 3.5}$$

38c. part a is the y-int

part b is the x-int

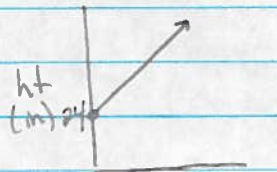
39a. Table

x	y
0	24
1	27
2	30
3	33
4	36
⋮	⋮

Eq'n

$$y = 24 + 3x$$

Graph



Time (wks)

39b.  $6' = 72''$ , so

$$72 = 24 + 3x$$

$$3x = 48$$

$$\boxed{x = 16 \text{ wks}}$$

39c. Inputs:  $x \geq 0$ , Outputs:  $y \geq 24$



Lesson 1.1.3 (cont'd) 40

$$40a. \quad 4(x-1) - 2(3x+5) = -3x-1$$

$$\underline{4x-4} - \underline{6x-10} = -3x-1$$

$$-2x - 14 = -3x - 1$$

$$1x - 14 = -1$$

$$\boxed{x = 13}$$

$$40b. \quad 3x-5 = 2.5x+3 - (x-4)$$

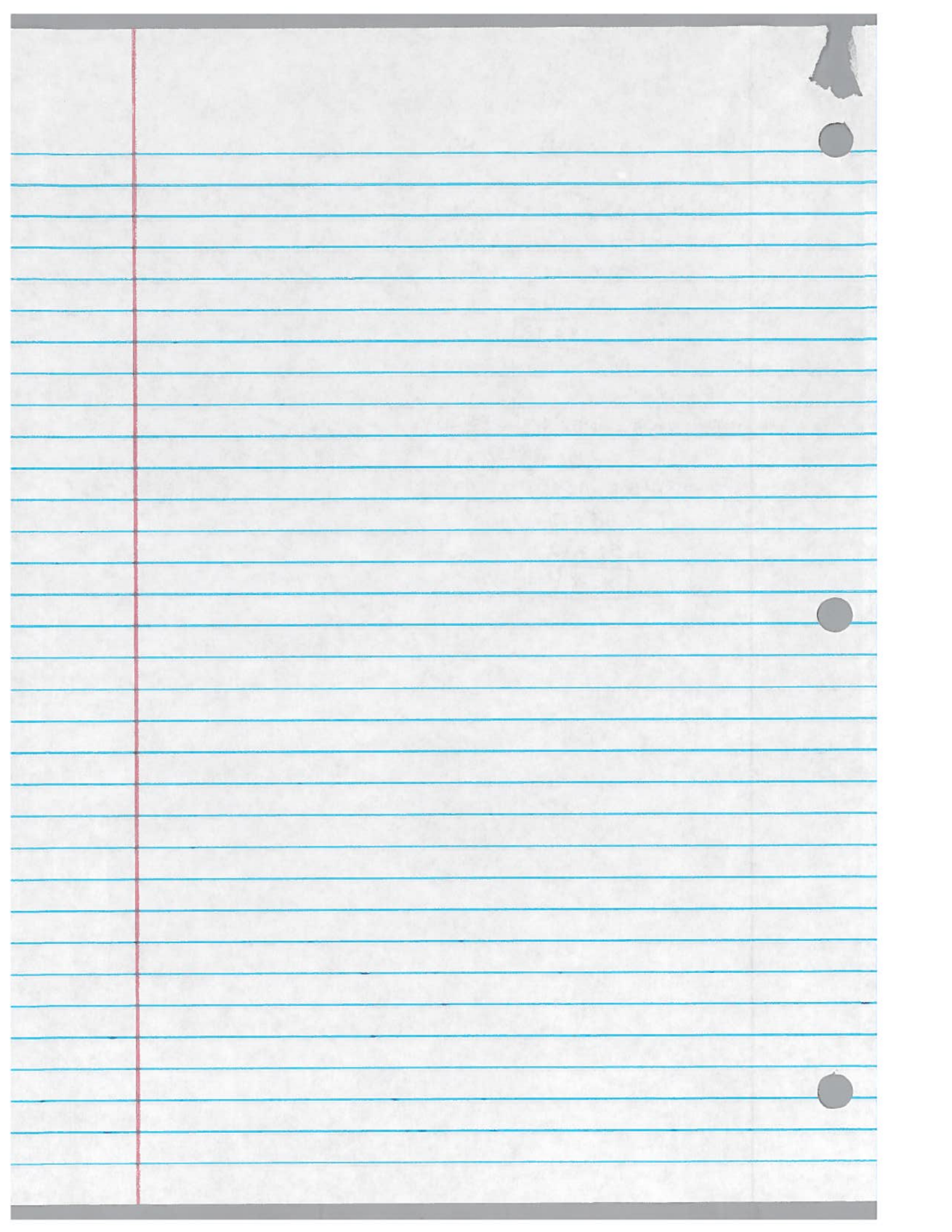
$$3x-5 = \underline{2.5x+3} - \underline{x+4}$$

$$3x-5 = \underline{1.5x+7}$$

$$1.5x - 8 = 7$$

$$1.5x = 12$$

$$\boxed{x = 8}$$



Lesson 1.1.4 p. 25: 46-52

46.  $f(x) = 3x - 5$  and  $g(x) = -4x + 9$

$$3x - 5 = -4x + 9$$

$$7x - 8 = 9$$

$$7x = 14$$

$$x = 2$$

$$y = 3(2) - 5$$

$$y = 1$$

$(2, 1)$

47.  $f(x) = \frac{1}{x}$

a.  $f(\frac{1}{2}) = \frac{1}{\frac{1}{2}}$   
 $= 1 \cdot \frac{2}{1}$   
 $= 2$

b.  $f(\frac{1}{10}) = \frac{1}{\frac{1}{10}}$   
 $= 1 \cdot \frac{10}{1}$   
 $= 10$

c.  $f(.01) = \frac{1}{.01}$   
 $= \frac{100}{1}$   
 $= 100$

d.  $f(.007) = \frac{1}{.007}$   
 $= \frac{1000}{7}$   
 $= 142.86$

48a.  $x^2 - 8x + 15 = 0$

-5	-5x	15
x	x <sup>2</sup>	-3x
	x	-3

$\begin{matrix} 15x^2 \\ -5x \\ -15 \end{matrix}$

48b.  $2x^2 - 5x - 6 = 0$

		-6
2x <sup>2</sup>		

$\begin{matrix} 12x^2 \\ -5x \\ -18 \end{matrix}$

doesn't factor, so  
use Quad. Form.  
 $a=2, b=-5, c=-6$

$$(x-5)(x-3) = 0$$

$x=5$     $x=3$

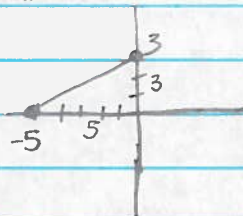
$$x = \frac{5 \pm \sqrt{(-5)^2 - 4 \cdot 2 \cdot -6}}{2 \cdot 2}$$

$x = 3.39$

$x = -0.89$

49.  $(-5, 0)$  and  $(0, 3)$

a.



Pyth. Theorem

$$a^2 + b^2 = c^2$$

$$(5)^2 + (3)^2 = c^2$$

$$25 + 9 = c^2$$

$$c^2 = 34$$

$$c = \sqrt{34} \text{ or } 5.83$$

b.  $m = \frac{3}{5}$

50a.  $\frac{1}{52}$

50b.  $\frac{51}{52}$

51.  $4.1x = 9.5x + 23.7$

$-5.4x = 23.7$

$x = -4.39$

The error is in line 3 ... it  
should be  $0 = 5.4x + 23.7$

52a.  $3.9x - 2.1 = 11.2x + 51.7$

$-2.1 = 7.3x + 51.7$

$-53.8 = 7.3x$

$x = -7.37$

52b.  $\frac{1}{5}x - 2 = \frac{13}{25} - .7x$

$.7x - 2 = .52 - .7x$

$-2 = .52 - .9x$

$-2.52 = -.9x$

$x = 2.8$