

$$1-65) a) f(2.5) = \frac{1}{2.5-2} = \frac{1}{.5} = \frac{1}{\frac{1}{2}} = \dots$$

$$b) f(1.75) = \frac{1}{1.75-2} = \frac{1}{.25} = \boxed{4}$$

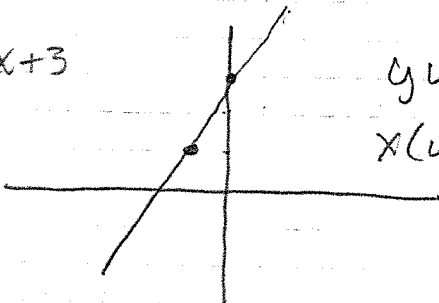
$$c) f(2) = \frac{1}{2-2} = \frac{1}{0} = \phi$$

d) you cannot divide by zero

$$1-66) a) y = 2x + 3$$

$$m=2$$

$$b=3$$



y int (0, 3)

x(int) (-3/2, 0)

$$0 = 2x + 3$$

$$-3 = 2x$$

$$-3/2 = x$$

b) The equations are equivalent. They just have different notation

$$1-67) \sin 35 = \frac{y}{3}$$

$$3 \sin 35 = y$$

$$y = 1.77 \text{ ft}$$

$$\cos 35 = \frac{x}{3}$$

$$3 \cos 35 = x$$

$$x = 2.72 \text{ feet}$$

- 1-68) a) D: -2, -1, 2      R: -1, 0, 1  
 b) D:  $-1 < x \leq 1$       R:  $-1 \leq y < 2$   
 c) D:  $x > -1$       R:  $y > -1$   
 d) D: all real #'s      R: all real #'s

1-69)  $l = 4w$        $l + w = 22$   
 $4w + w = 22$        $w = 4.4 \text{ cm}$   
 $\frac{5w}{5} = \frac{22}{5}$        $l = 4(4.4) = 17.6 \text{ cm}$

1-70) a)  $\frac{3}{x} + 6 = -45$   
 $\frac{3}{x} - 6 = -6$

~~$\frac{3}{x} = \frac{-51}{1}$~~

$\frac{3}{-51} = \frac{-51x}{-51}$

$x = -\frac{1}{17}$

b)  ~~$\frac{(x-2)}{5} = \frac{(10-x)}{8}$~~

$8(x-2) = 5(10-x)$

$8x - 16 = 50 - 5x$   
 $+5x$        $+5x$

$13x - 16 = 50$   
 $+16$        $+16$

$\frac{13x}{13} = \frac{66}{13}$

$x = \frac{66}{13} \approx 5.08$

c)  $(x-1)(x-3) = 0$

$x+1=0$

$x = -1$

$x-3=0$

$x = 3$

1-71) a)  $x^2 - 2x + 6 = 2x + 11$   
 $-2x$        $-2x$

$x^2 - 4x + 6 = 11$   
 $-11$        $-11$

$x^2 - 4x - 5 = 0$

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

$x = 5$   
 $x = -1$

1-71 cont'd

$$b) f(x) + g(x) = x^2 - 2x + 6 + 2x + 11$$
$$= x^2 + 17$$

$$c) f(x) - g(x) = x^2 - 2x + 6 - (2x + 11)$$
$$= x^2 - 4x - 5$$

1.2.1 cont'd (Thurs 9/4) 1-72  $\rightarrow$  1-77

$$1-72) a) y = \frac{3}{5}x + 1$$
$$\frac{5}{3}(y-1) = \frac{3}{5}x \left(\frac{5}{3}\right)$$

$$\frac{5}{3}(y-1) = x$$

$$b) 3x + 2y = 6$$
$$\quad \quad -2y \quad -2y$$

$$\frac{3x}{3} = \frac{-2y}{3} + \frac{6}{3}$$

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

$$c) \sqrt{y} = \sqrt{x^2}$$

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

$$d) y = x^2 - 100$$
$$+100 \quad \quad +100$$

$$\sqrt{x^2} = \sqrt{y + 100}$$

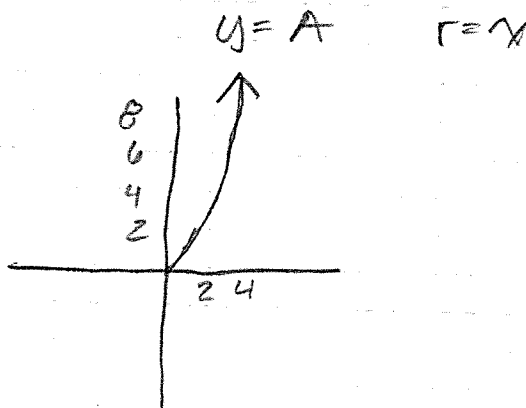
$$x = \pm \sqrt{y + 100}$$

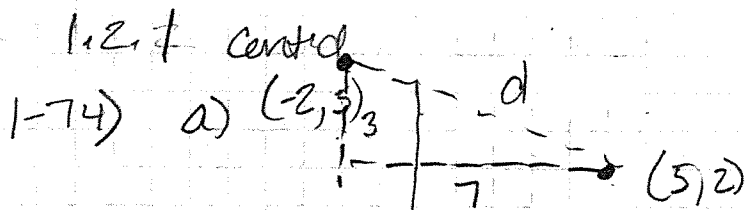
1-73)

$$A = \pi r^2$$

$$y = \pi x^2$$

x	y
0	0
1	$\pi$
2	$4\pi$
3	$9\pi$
4	$16\pi$





$$d^2 = 7^2 + 3^2$$

$$d^2 = 49 + 9$$

$$\sqrt{d^2} = \sqrt{58} \quad d = 7.62 \text{ units}$$

b)  $m = \frac{2 - 3}{5 - (-2)} = \boxed{\frac{-3}{7}}$

1-75)  $-1 = x^2 + 2x + 1$   $x(x+2) = 0$

$0 = x^2 + 2x$

$x = 0$   
 or  
 $x = -2$

1-76) a) When  $x=0$  you find the y-int

$y = 3(0) + 6 \quad (0, 6)$

b)  $0 = 5y - 10 \quad (0, 2)$

$\frac{10}{5} = \frac{5y}{5} \quad y = 2$

c)  $y = (0)^2 \quad y = 0 \quad (0, 0)$

d)  $y = 2(0)^2 - 4 \quad (0, -4)$

$y = -4$

e)  $y = (0-5)^2 \quad (0, 25)$

$y = 25$

f)  $y = 3(0)^3 - 2(0)^2 + 13 \quad (0, 13)$

$y = 13$

1-77) cannot subtract 4 from 10

$$\begin{array}{r} 3x+2=10-4(x-1) \\ 3x+2=10-4x+4 \\ +4x \quad +4x \end{array}$$

$$\begin{array}{r} 7x+2=14 \\ -2 \quad -2 \end{array}$$

$$\frac{7x}{7} = \frac{12}{7}$$

$$\boxed{x = \frac{12}{7}}$$

Lesson 1.2.2 Fri 9/5 (1-84 → 1-90)

$$1-84) \quad \begin{array}{r} 2x^2-3x+4 \\ -x^2 \end{array} = \begin{array}{r} x^2+5x-3 \\ -x^2 \end{array}$$

$$\begin{array}{r} x^2-3x+4 \\ -5x \end{array} = \begin{array}{r} 5x-3 \\ -5x \end{array}$$

$$\begin{array}{r} x^2-8x+4 \\ +3 \quad +3 \end{array} = -3$$

$$\begin{array}{r} x^2-8x+7 \\ (x-7)(x-1)=0 \end{array}$$

$$x=7 \text{ and } x=1$$

$$\boxed{(7, 81)}$$

$$(7)^2 + 5(7) - 3$$

$$49 + 35 - 3 = 81$$

$$\boxed{(1, 3)}$$

$$(1)^2 + 5(1) - 3$$

$$1 + 5 - 3 = 3$$

$$1-85) \quad a) \quad -2(x+4) = 35 - (7-4x)$$

$$\begin{array}{r} -2x-8 \\ -4x \end{array} = \begin{array}{r} 35-7+4x \\ -4x \end{array}$$

$$\begin{array}{r} -6x-8 \\ +8 \quad +8 \end{array} = \begin{array}{r} 28 \\ +8 \end{array}$$

$$\frac{-6x}{-6} = \frac{36}{-6}$$

$$\boxed{x = -6}$$

$$b) \quad \cancel{\frac{(x-4)}{1}} = \cancel{\frac{(8-3x)}{5}}$$

$$\frac{26x}{26} = \frac{16}{26}$$

$$\boxed{x = \frac{38}{13}}$$

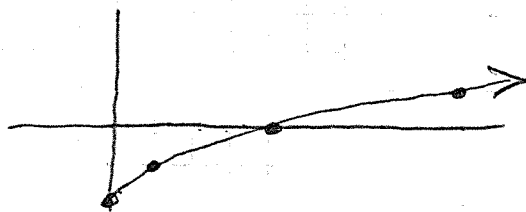
$$\begin{array}{r} 5(x-4) = 7(8-3x) \\ 5x-20 = 56-21x \\ +21x \quad +21x \end{array}$$

$$\begin{array}{r} 26x-20 = 56 \\ +20 \quad +20 \end{array}$$

1.2.2 (cont'd)

1-86)  $f(x) = \sqrt{x} - 2$        $y = \sqrt{x} - 2$

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



x-int (4, 0)

y-int (0, -2)

D:  $x \geq 0$

R:  $y \geq -2$

1-87)

$x + x + 18 = 84$

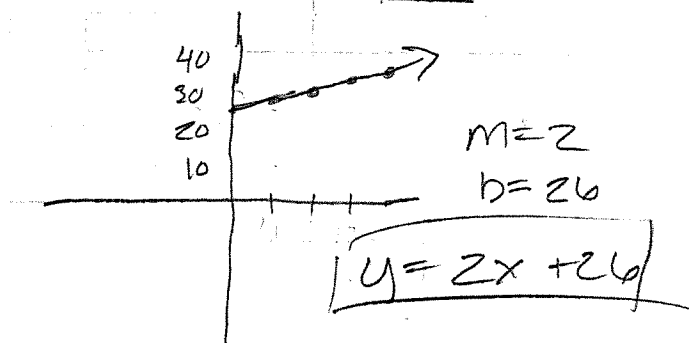
$2x + 18 = 84$

$-18 \quad -18$

$2x = 66$

$x = \boxed{33}$

and  $33 + 18 = \boxed{51}$



1-88) a)

x	y
0	26
1	28
2	30
3	32
4	34

b)  $100 = 2x + 26$

$\frac{74}{2} = \frac{2x}{2}$

$x = \boxed{37 \text{ weeks}}$

1-89) when  $y = 0$

a)  $0 = 3x + 6$        $(-2, 0)$

$-6 = 3x$

$x = -2$

b)  $x = 5(0) - 10$        $(-10, 0)$

$x = -10$

c)  $\sqrt{0} = \sqrt{x^2}$        $(0, 0)$

$x = 0$

1-89 cont'd

$$\begin{aligned} d) \quad 0 &= 2x^2 - 4 \\ &+4 \quad +4 \\ \frac{4}{2} &= \frac{2x^2}{2} \end{aligned}$$

$$\begin{aligned} \sqrt{x^2} &= \sqrt{2} \\ x &= \pm\sqrt{2} \end{aligned}$$

$$(\pm\sqrt{2}, 0)$$

$$e) \quad \sqrt{0} = \sqrt{(x-5)^2}$$

$$(5, 0)$$

$$\begin{aligned} 0 &= x - 5 \\ 5 &= x \end{aligned}$$

$$f) \quad \begin{aligned} 0 &= x^3 - 13 \\ &+13 \quad +13 \end{aligned}$$

$$(\sqrt[3]{13}, 0)$$

$$\sqrt[3]{x^3} = \sqrt[3]{13}$$

$$x = \sqrt[3]{13}$$

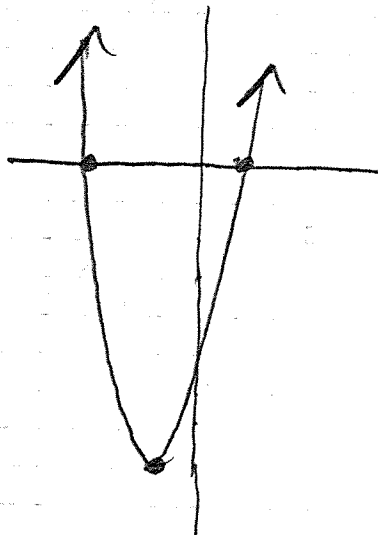
1-90)  $h(x) = 2x^2 + 4x - 6$

$$\begin{aligned} 0 &= 2(x^2 + 2x - 3) \\ &2(x+3)(x-1) \\ x &= -3 \quad x = 1 \end{aligned}$$

$$\text{Vertex} = \frac{-b}{2a} = \frac{-4}{2(2)} = \frac{-4}{4} = -1$$

$$y = 2(-1)^2 + 4(-1) - 6$$

$$2 - 4 - 6 = -8$$



D: all real #'s

$$R: y \geq -8$$

1.2.2 cond'd Monday 9/8 (1-91 → 1-97)

1-91) a)  $y = mx + b$   
 $-b$   $-b$

$$\frac{y-b}{m} = \frac{mx}{m}$$

$$x = \frac{y-b}{m}$$

b)  $A = \pi r^2$

$$\sqrt{r^2} = \sqrt{\frac{A}{\pi}}$$

$$r = \pm \sqrt{\frac{A}{\pi}}$$

c)  $V = LHW$   
 $LH$   $LH$

$$W = \frac{V}{LH}$$

d)  $2x + \frac{1}{y} = 3$   
 $-2x$   $-2x$

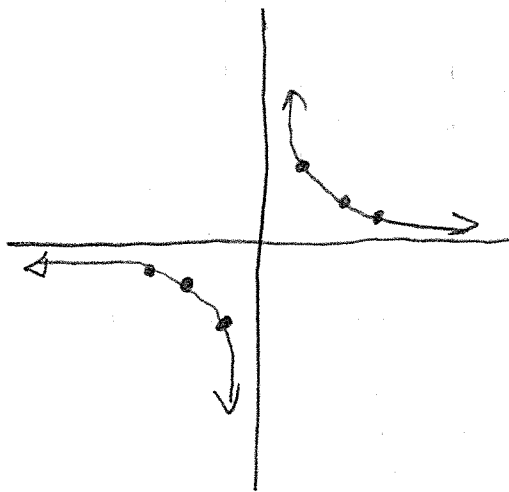
$$\frac{1}{y} = 3 - 2x$$

take recip.

$$y = \frac{1}{3-2x}$$

1-92)  $g(x) = \frac{2}{x}$

x	y
-3	-2/3
-2	-1
-1	-2
0	undef
1	2
2	1
3	2/3



Summary statement:  $g(x) = \frac{2}{x}$  has a domain of all real #'s other than zero

1st justification: You can see this when you look at the graph because the x values never touch zero

2nd justification: You can see this in the table because if  $x=0$  the range is undefined

3rd justification: It makes sense with the equation because  $x$  cannot = 0



1-93) a) use substitution or elimination

b) They must be equal

$$c) \begin{array}{r} 3x+15=3-3x \\ +3x \qquad \qquad +3x \end{array}$$

$$6x+15=3$$

$$\qquad -15 \quad -15$$

$$\frac{6x}{6} = \frac{-12}{6}$$

$$\boxed{x = -2}$$

d)  $y = 3(-2)+15 = -6+15 = 9$

$$\boxed{y = 9}$$

e) they cross @  $(-2, 9)$

1-94)

~~$$\frac{81b5}{544} = \frac{12}{x}$$~~

$$\frac{8x}{8} = \frac{60}{8}$$

$$\boxed{x = 7.5 \text{ feet}}$$

1-95)  $h(x) = x^2 - 5$

$$0 = x^2 - 5$$

$$+5 \qquad +5$$

$$\sqrt{x^2} = \sqrt{5}$$

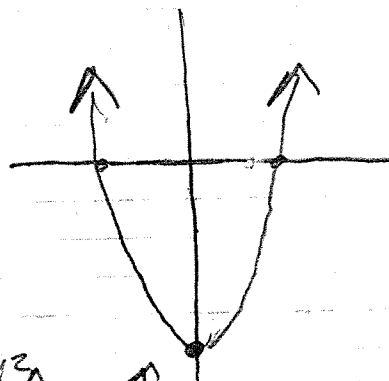
$$x = \pm\sqrt{5}$$

$(+\sqrt{5}, 0)$  and  $(-\sqrt{5}, 0)$

$$y = \text{wt} =$$

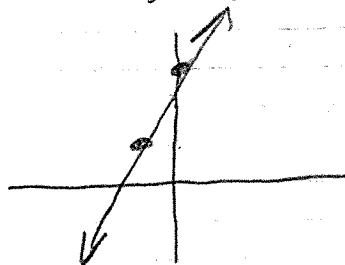
$$y = 0 - 5$$

$$y = 5$$



1-96) a)  $y - 2x = 3$

$$y = 2x + 3$$



d) cont'd

$$y = 2(0) + 3 = 3$$

$$y = 2(2) + 3 = 7$$

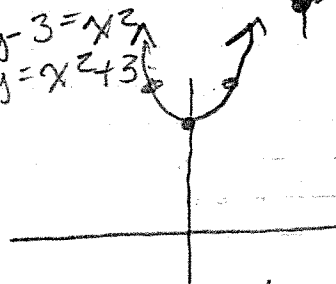
intersect @

$$\begin{pmatrix} 0 \\ 3 \end{pmatrix}$$

$$\begin{pmatrix} 2 \\ 7 \end{pmatrix}$$

c) for a)  $(-3/2, 0)$  x int  
 $(0, 3)$  y int

b)  $y - 3 = x^2$   
 $y = x^2 + 3$



x	y
-1	4
0	3
1	4

$$d) \begin{array}{r} 2x+3=x^2+3 \\ -2x \qquad -2x \end{array} \quad \begin{array}{r} 3=x^2-2x+3 \\ -3 \qquad -3 \end{array}$$

$$0 = x^2 - 2x$$

$$x(x-2)$$

$$x = 0$$

$$x = 2$$

for b) No x int  
y int  $(0, 3)$

- 1-97)
- a) Quadratic Formula
  - b) Law of Sines
  - c) Pythagorean Thm
  - d) Law of Cosines