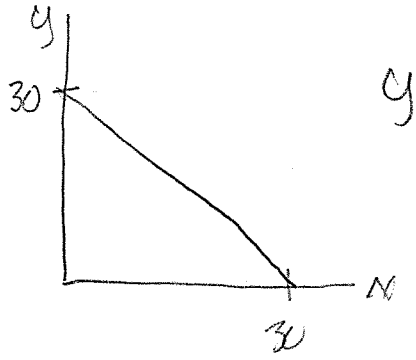
# 1-19 ⇒ 1-25 (8/25)

1-19)

| x | y |
|---|---|
| 0 | 30 |
| 5 | 25 |
| 10 | 20 |
| 15 | 15 |
| 20 | 10 |
| 25 | 5 |
| 30 | 0 |




$y = 30 - x$

or $y = -1x + 30$

$m = -1$

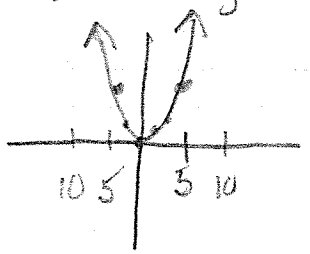
$b = 30$

1-20)

| x | y |
|---|---|
| 0 | 8 |
| 1 | 1/2 |
| 2 | 2 |
| 4 | 8 |
| -2 | 2 |
| -4 | 8 |

inputs: all real #'s

outputs: anything $\geq 0$




1-21) $f(x) = -2/3x + 3$ $\quad g(x) = 2x^2 - 5$

a) $f(3) = -2/3(3) + 3 = -2 + 3 = \boxed{1}$

c) $g(-3) = 2(-3)^2 - 5 = 18 - 5 = \boxed{13}$

b) $f(x) = -5 \quad -2/3x + 3 = -5$

$(-3/2) \quad -2/3x = -8(-3/2)$

$\boxed{x = 12}$

d) $g(x) = -7 \quad 2x^2 - 5 = -7$

$2x^2 = -2$

$\sqrt{x^2} = \sqrt{-1}$ ⊘ cannot take sq. root of neg. #

e) $g(x) = 8 \quad 8 = 2x^2 - 5$

$13 = 2x^2$

$x^2 = 13/2$

$x = \pm\sqrt{13/2}$

f) $g(x) = 9$

$2x^2 - 5 = 9$

$2x^2 = 14$

$x^2 = 7$

$x = \pm\sqrt{7}$

1-22)

| x | -1 | 3 | -2 | 0 |
|---|---|---|---|---|
| y | -1 | 27 | -8 | 0 |

y values = the cube of x values

$y = x^3$ or $f(x) = x^3$

1-23) a) The more gas you buy the more money you spend.

Independent: Gallons of Gas Dep: Dollars

b) People grow alot in their early years then the growth slows

Ind: Age Dep: height

c) As time goes by the ozone layer decreases but the effect is slowing down.

Ind: year Dep: ozone

d) As the number of students grows more classrooms are needed and each holds 30 students.

Ind: # of students Dep: # of classrooms

1-24) Similar by AA~
- shared angle A
- right angles

a) $\frac{y}{x} = \frac{n}{m}$ b) $\frac{n}{y} = \frac{M}{x}$

1-25) $3(x-2) - 2(x+7) = 2x+17$

$3x-6 \quad -2x \quad -14 = 2x+17$ ← Error Not "+14"

$x - 20 = 2x + 17$

$-20 = x + 17$

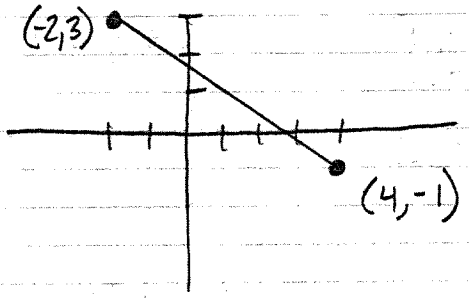
$-37 = x$

1.1 & 3 (1-34 ⇒ 1-40) Tue/Wed 8/26 & 8/27

1-34) a) domain $-2 \leq x \leq 4$

b) $-1 \leq y \leq 3$ (range)

c) No the graph is continuous and would include all the values in between those integers.

d) 


1-35) $f(x) = 3x^2 - 5$ $g(x) = \sqrt{x-5} + 2$

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

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

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

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

e) $f(x) + g(x) = 3x^2 - 5 + \sqrt{x-5} + 2$

$\boxed{3x^2 + \sqrt{x-5} - 3}$

f) $g(x) - f(x) = \sqrt{x-5} + 2 - 3x^2 - 5$

$= \boxed{\sqrt{x-5} - 3x^2 - 3}$

g) Domain $f(x)$ all real numbers

h) Domain $g(x)$ $x \geq 5$

i) Because for $g(x)$ the square root can not be a negative number where any real number can be squared.

# 1.1.3 Cont'd

1-36) Chelita did not factor correctly in step 1

$x^2-10x+21=0$ should factor to be

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

$x-7=0$ $\quad$ $x-3=0$

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

1-37) a) $x=3y+6$

$3y+6=x$

$-6 \quad -6$

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

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

b) $x=5y-10$

$5y-10=x$

$+10 \quad +10$

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

$\boxed{y=\frac{x}{5}+2}$

c) $x=y^2$

$\sqrt{y^2}=\pm\sqrt{x}$

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

remember $\pm$ !

d) $x=2y^2-4$

$2y^2-4=x$

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

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

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

e) $x=(y-5)^2$

$\sqrt{(y-5)^2}=\pm\sqrt{x}$

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

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

1.1.3 Cont'd

1-38) $f(x) = 2x - 7$

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

b) $f(x) = 0$

$2x - 7 = 0$
$+7 \quad +7$

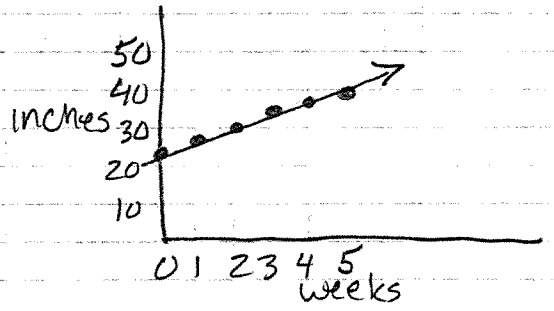
$\frac{2x}{2} = \frac{7}{2}$

$\boxed{x = \frac{7}{2}}$

c) If $x = 0$ that is the y-intercept
If y or $f(x) = 0$ that is the x-intercept

1-39) a)

| x | y (inches) |
|---|---|
| 0 | 24 |
| 1 | 27 |
| 2 | 30 |
| 3 | 33 |
| 4 | 36 |
| 5 | 39 |




slope = 3 y-int = 24

$\boxed{y = 3x + 24}$

b) $6(12) = 72$

Can see this by using the equation or extending the graph or table to where $y = 72$

$72 = 3x + 24$
$-24 \quad -24$

$\frac{48}{3} = \frac{3x}{3}$ $\quad x = 16$

$\boxed{16 \text{ weeks}}$

c) inputs (domain) : all real numbers

outputs (range) : $y \geq 24$

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

$4x - 4 - 6x - 10 = 3x - 1$

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

$-1x - 14 = -1$

$\boxed{x = 13}$

b) $3x - 5 = 2.5x + 3 - (x - 4)$

$3x - 5 = 2.5x + 3 - x + 4$

$3x - 5 = 1.5x + 7$

$-1.5x \quad -1.5x$

$1.5x - 5 = 7$

$\frac{1.5x}{1.5} = \frac{12}{1.5}$

$\boxed{x = 8}$

Lesson 4.4.4 (1-46 ⇒ 1-52) Thursday 8/28

1-46 $3x-5 = -4x+9$

$+4x \quad +4x$

$7x-5 = 9$

$+5 \quad +5$

$\frac{7x}{7} = \frac{14}{7}$ $\quad x = 2$

$3(2)-5 = 6-5 = 1$ $\quad \boxed{(2,1)}$

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

a) $f(1/2) = \frac{1}{1/2} = 1 \div \frac{1}{2} = 1 \cdot \frac{2}{1} = \boxed{2}$

b) $f(1/10) = \frac{1}{\frac{1}{10}} = 1 \div \frac{1}{10} = 1 \cdot \frac{10}{1} = \boxed{10}$

c) $f(.01) = \frac{1}{0.01} = 100$

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

1-48) a) $x^2-8x+15=0$

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

$\boxed{x=5 \quad x=3}$

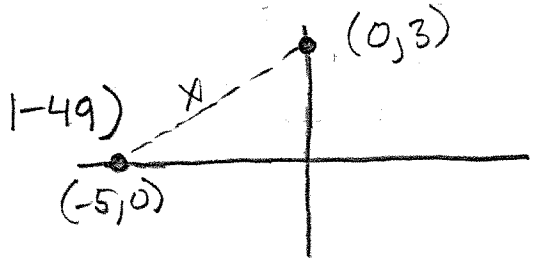
b) $2x^2-5x-6=0$

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

$\frac{5 \pm \sqrt{25+48}}{4}$

$\boxed{\frac{5 \pm \sqrt{73}}{4}}$

1-49)




$x^2 = 3^2 + 5^2$

$x^2 = 9 + 25$

$x^2 = 34$

$x = \sqrt{34} \cong 5.83$ units

1-50) a) $\frac{1}{52}$

b) $\frac{51}{52}$

1.1.4 Contd

1-51) $4.1x = 9.5x + 23.7$
$-4.1x \quad -4.1x$

$0 = 5.4x + 23.7$

$\frac{5.4x}{5.4} = \frac{-23.7}{5.4}$ This is where the error occured

$\boxed{x = -4.39}$

1-52) a) $3.9x - 2.1 = 11.2x + 51.7$
$-3.9x \quad -3.9x$

$-2.1 = 7.3x + 51.7$
$-51.7 \quad -51.7$

$-53.8 = 7.3x$

$-7.37 = x$

b) $\frac{1}{5}x - 2 = \frac{13}{25} - 0.7x$

$.2x - 2 = 13/25 - .7x$
$+.7x \quad +.7x$

$.9x - 2 = 13/25$

$.9x = 2 + 13/25$

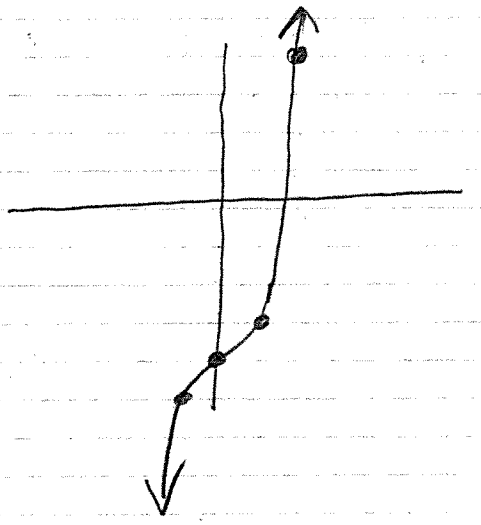
$.9x = \frac{63}{25}$

$x = 2.8$

1.2.1 Tue/Wed 9/2 and 9/3 (1-59 → 1-71)

1-59) $h(x) = x^3 - 4$

| x | y |
|---|---|
| -3 | $(-3)^3-4 = -27-4 = -31$ |
| -2 | $(-2)^3-4 = -8-4 = -12$ |
| -1 | $(-1)^3-4 = -1-4 = -5$ |
| 0 | $(0)^3-4 = -4$ |
| 1 | $(1)^3-4 = 1-4 = -3$ |
| 2 | $(2)^3-4 = 8-4 = 4$ |
| 3 | $(3)^3-4 = 27-4 = 23$ |



Domain $-\infty < x < \infty$
all real #s

Range all real #'s

x-int $(\sqrt[3]{4}, 0)$

y-int $(0, -4)$

$0 = x^3 - 4$
$x^3 = 4$
$x = \sqrt[3]{4}$

1-60) a) $\sin 15 = \frac{x}{20}$ $\quad 20 \sin 15 = x$ $\quad x = 5.2\text{m}$

b) $\tan 15 = \frac{5}{x}$ $\quad x \tan 15 = 5$

$x = \frac{5}{\tan 15} = 18.7''$

c) $\cos\theta = \frac{10}{11}$

$\cos^{-1}\frac{10}{11} = 24.6°$

d) $6^2 + 12^2 = x^2$

$144 + 36 = x^2$

$\sqrt{180} = \sqrt{x^2}$

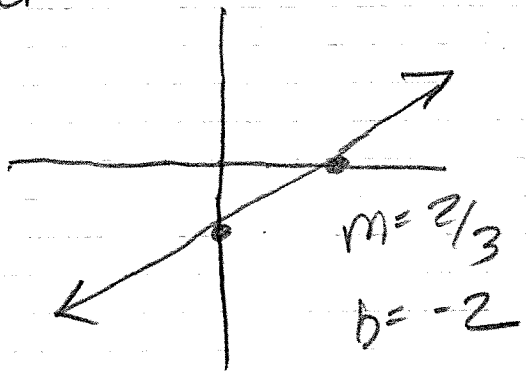
$x = 13.4$

1-61) a) Linear
x is to the power of 1

b) $4x - 6y = 12$
$-4x \quad -4x$

$\frac{-6y}{-6} = \frac{-4x}{-6} + \frac{12}{-6}$

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



$m = 2/3$

$b = -2$

1-61) cont'd

c) let $x = 0$ for y-int and solve

$4(0) - 6y = 12$ $\quad (0, -2)$

$-6y = 12$

$y = -2$

let $y = 0$ for x-int and solve

$4x - 6(0) = 12$ $\quad (3, 0)$

$\frac{4x}{4} = \frac{12}{4}$

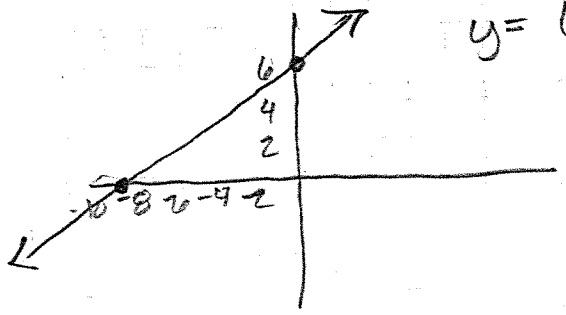
$x = 3$

d) Standard form because the x or y term will be isolated

e) x-int $\frac{2x}{2} - \frac{3(0)}{2} = \frac{-18}{2}$ $\quad x = -9 \quad (-9, 0)$

y-int $2(0) - \frac{3y}{3} = \frac{-18}{3}$ $\quad (0, 6)$

$y = 6$




1-62) a) D: $x = -1, 1, 2$ $\quad$ R: $y = -2, 1, 2$

b) D: $-2 \leq x < 1$ $\quad$ R: $-1 \leq y < 2$

c) D: $x \geq -1$ $\quad$ R: $y \geq -1$

d) D: all real #'s $\quad$ R: $y \geq -2$

1-63) The x was not multiplied on rt side of equation in line 2

$x\left(\frac{5}{x}\right) = (x-4)x$ $\quad 5 = x^2 - 4x$ $\quad 0 = x^2 - 4x - 5$

$-5 \quad -5$

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

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

1-64) a) $x\left(\frac{6}{x}\right) = (x-1)x$

$6 = x^2 - x$

$-6 \quad -6$

$0 = x^2 - x - 6$

$0 = (x-3)(x-2)$

$\boxed{x = 3}$

$\boxed{x = 2}$

b) $\left(x\right)\frac{9}{x} = x(x)$

$\sqrt{9} = \sqrt{x^2}$

$\boxed{x = \pm 3}$