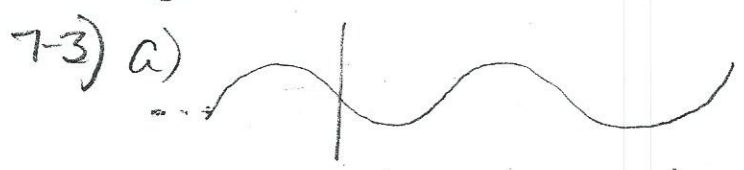


Delete 7-8

Monday 3/9 7.1.1 (7-3 \Rightarrow 7-11)



The shape would be stretched vertically

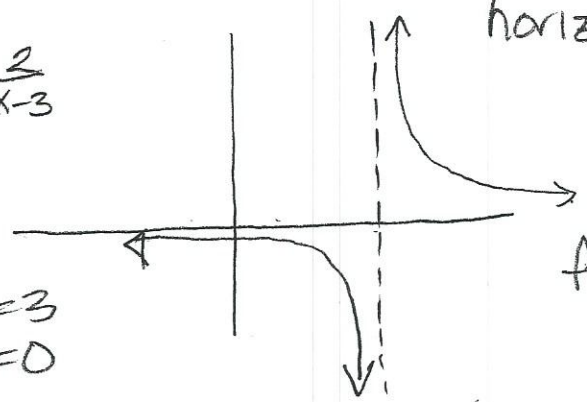


Each cycle would be longer horizontally

7-4) $f(x) = \frac{2}{x-3}$

D: $x \neq 3$
R: $y \neq 0$

Asymptotes $x=3$
 $y=0$



$f^{-1}(x) = \frac{2}{x} + 3$

7-5) a) $\frac{\tan 44}{1} = \frac{x}{28}$

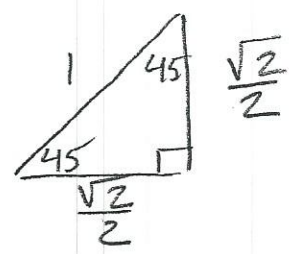
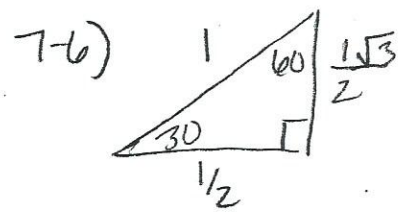
$28 \tan 44 = x$
 $x = 27.04 \text{ ft}$

b) $\frac{\cos 32}{1} = \frac{150}{x}$

$\frac{x \cos 32}{\cos 32} = \frac{150}{\cos 32}$
 $x = 176.88 \text{ cm}$

c) ~~$\frac{\sin 38}{1} = \frac{x}{47}$~~

$47 \sin 38 = x$
 $x = 28.94 \text{ m}$



$$7-7) (0,0) (3,9) (4,0)$$

$$0 = 0(a) + 0(b) + c$$

$$0 = c$$

$$9 = 9a + 3b + c$$

$$0 = 36a + 6b + c$$

$$0 = 36a + 6b$$

$$9 = 9(-1) + 3b$$

$$\frac{18}{3} = \frac{3b}{3}$$

$$6 = b$$

$$y = -x^2 + 6x$$

$$-2(9 = 9a + 3b)$$

$$-18 = -18a - 6b$$

$$0 = 36a + 6b$$

$$\frac{-18}{18} = \frac{18a}{18} \quad a = -1$$

$$7-9) a) y = x^2 + 5x + 7$$

$$y = \left(x + \frac{5}{2}\right)^2 + 7 - \frac{25}{4}$$

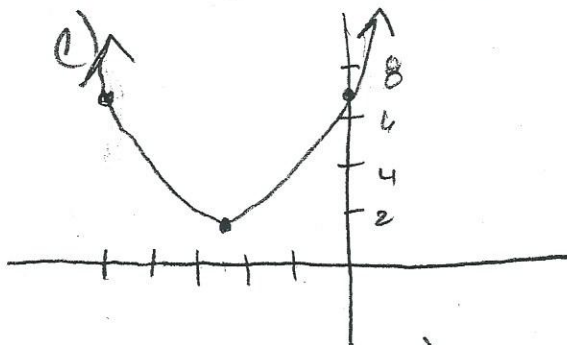
$$y = \left(x + \frac{5}{2}\right)^2 + \frac{28}{4} - \frac{25}{4}$$

$$y = \left(x + \frac{5}{2}\right)^2 + \frac{3}{4}$$

$$\text{Vertex } \left(\frac{-5}{2}, \frac{3}{4}\right)$$

$$b) y = \left(\frac{5}{2}\right)^2 + \frac{3}{4} = \frac{25}{4} + \frac{3}{4} = \frac{28}{4} = 7$$

$$y\text{-int: } (0, 7)$$



$$\text{3rd pt } \left(-\frac{10}{2}, 7\right) \\ (-5, 7)$$

$$7-10) y - 7 = 3(x+4)^4$$

No x intercepts

$$y\text{-int: } y - 7 = 3^4$$

$$y - 7 = 81$$

$$y = 88$$

$$(0, 88)$$

$$7-11) \quad x^2 - 2x + y^2 - 29 = 0$$

$$(x^2 - 2x + 1) + y^2 = 29 + 1$$

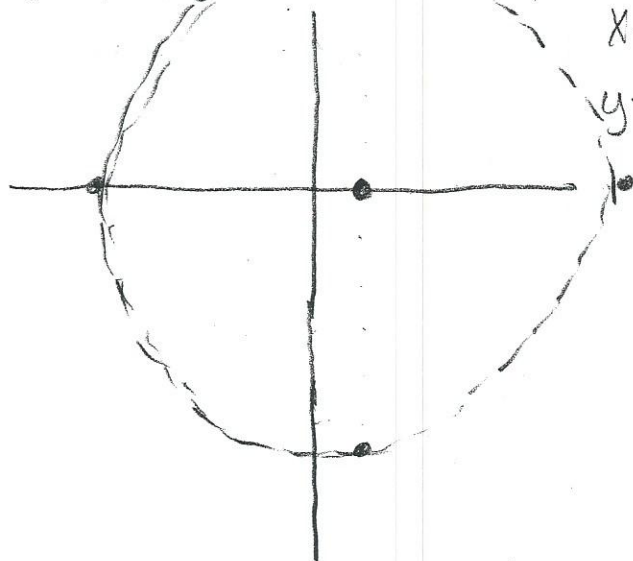
$$(x-1)^2 + (y-0)^2 = 30$$

center $(1, 0)$

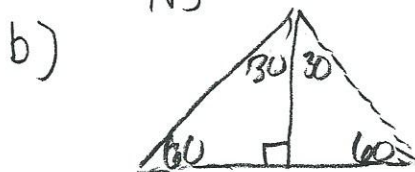
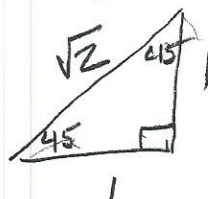
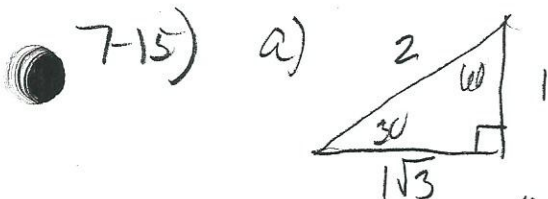
radius $= \sqrt{30} \sim 5.5$

x-int $(\pm\sqrt{30}+1, 0)$

y-int $(0, \pm\sqrt{29})$



Tues/Wed 3/10 → 3/11 7.1.2 (7-15 → 7-32)



$30+30=60^\circ$
by reflecting the 30-60-90
you get a 60-60-60
equilateral Δ

$$7-16) \quad \sin A = \frac{\sqrt{3}}{1}$$

$$\sin^{-1} \frac{\sqrt{3}}{1} = A$$

$$A = 17.5^\circ$$

$$7-17) \quad y = 2x^2 + x - 10$$

$$AC = \begin{matrix} -20 \\ 5 \quad -4 \end{matrix}$$

$$y = 2x^2 - 4x + 5x - 10$$

$$y = 2x(x-2) + 5(x-2)$$

$$y = (2x+5)(x-2)$$

$$y \text{ int} = -10 \quad (0, -10)$$

$$\left. \begin{array}{l} x=2 \quad (2, 0) \\ x=-5/2 \quad (-5/2, 0) \end{array} \right\} \text{x-intercepts}$$

7-18) a) $\log(1) = 0$

b) $\log 10^3$ $x=3$
 $10^x = 10^3$

c) $10^{\log(4)}$

$\log_{10} x = \log 4$ $x=4$

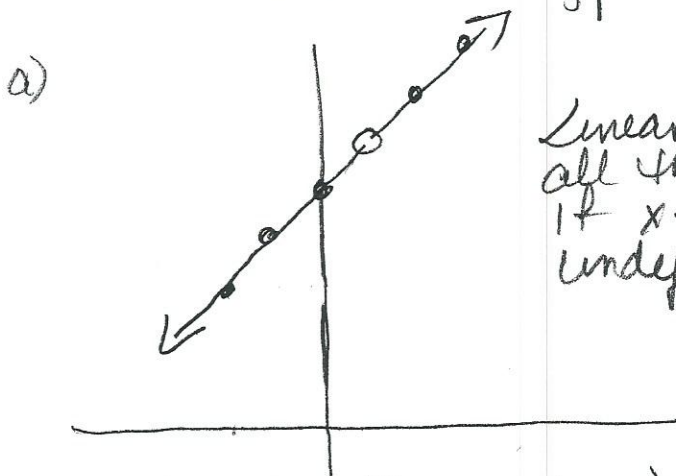
d) $10^{3(\log 4)}$

$\log_{10} x = 3 \log 4$; $\log_{10} x = \log_{10} 4^3$

$x = 4^3 = 64$

7-19) $f(x) = \frac{x^2 + 4x - 5}{x - 1}$

x	-2	-1	0	1	2	3
y	3	4	5	∅	7	8



Linear, can't connect all the pts because if $x=1$ it is undefined

b) $\frac{(x+5)(x-1)}{(x-1)} = (x+5)$ $f(1,9) = 5.9$
 $f(1,1) = 6.1$

No asymptote

c) The complete graph is the line $y = x + 5$ with a hole at $(1, 6)$

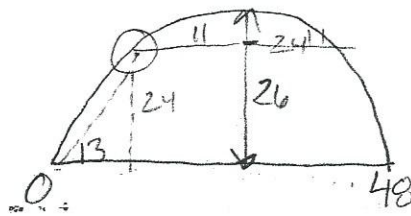
7-20) a) Exponential

b) $y = 60,000 + 12,000(.93)^x$

$\frac{12,000 - 1621}{10,379}$

$(0, 12000)$ $12000 = ab^0$ $a = 12000$
 $(2, 10379)$ $10379 = ab^2$ $b^2 = .864$
 $b = .93$

7-21



$$y = -.045(x-24)^2 + 26$$

$$x=13 \Rightarrow y = -.045(13-24)^2 + 26$$

$$y = -.045(-11)^2 + 26$$

$$y = -5.445 + 26$$

$$y = 20.5 \text{ ft}$$

$$(0,0) \quad y = a(x-h)^2 + k$$

$$(48,0)$$

vertex (24, 26)

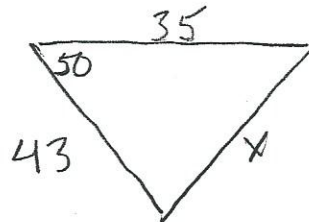
$$y = a(x-24)^2 + 26$$

$$0 = a(-24)^2 + 26$$

$$\frac{-26}{576} = \frac{a(576)}{576} \quad a = -.045$$

The ht of the tunnel @ the edge of the house is only 20.5' so it won't fit

7-22) a)



Law of Cosines

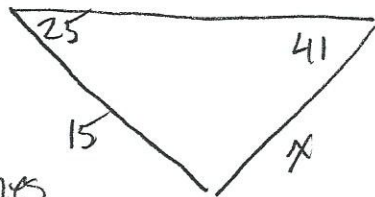
$$x^2 = 35^2 + 43^2 - 2(35)(43)\cos 50$$

$$x^2 = 1225 + 1849 - 1934.9$$

$$x^2 = 1139.2$$

$$x = 33.7$$

b)



Law of Sines

~~$$\frac{\sin 41}{15} = \frac{\sin 25}{x}$$~~

$$\frac{x \sin 41}{\sin 41} = \frac{15 \sin 25}{\sin 41}$$

$$x = 9.66$$

7-23) $x + y + z = 40$

$$y = x - 5$$

$$x = 2z$$

$$-x + y = -5$$

$$x - 2z = 0$$

① $x + y + z = 40$

② $-x + y = -5$

③ $x - 2z = 0$

① + ③ $x + y + z = 40$

$$-x + z = 0$$

$$(y + 3z = 40) - 2$$

① + ② $x + y + z = 40$

$$-x + y = -5$$

$$2y + z = 35$$

$$2y + z = 35$$

$$-2y - 6z = -80$$

$$2y + z = 35$$

$$2y = 26$$

$$y = 13$$

$$x = 2z$$

$$x = 2(9) = 18$$

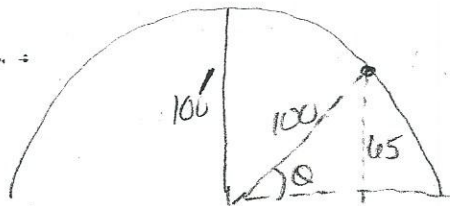
$$(18, 13, 9) \quad -5z = -45$$

$$z = 9$$

7-24) $h(\theta) = \sin \theta$

$-\infty < x < \infty$
all real numbers

7-25)



$\sin \theta = \frac{65}{100} = .65$

$\theta = \sin^{-1}.65 = 40.5^\circ$

or $180 - 40.5 = 139.5^\circ$

7-26) $y = 3x^2 - 24x + 55$

she did not subtract $3 \cdot 16$ from 55
 $55 - 48 = 7$ vertex $(4, 7)$
since she factored out a 3

7-27) $\frac{13^{12}}{14^{28}} \cdot \frac{27^3}{13^4} \cdot \frac{2^{16}}{27^4} \cdot \frac{14^{22}}{13} \cdot \frac{27}{29} = \frac{2}{14} = \frac{1}{7}$

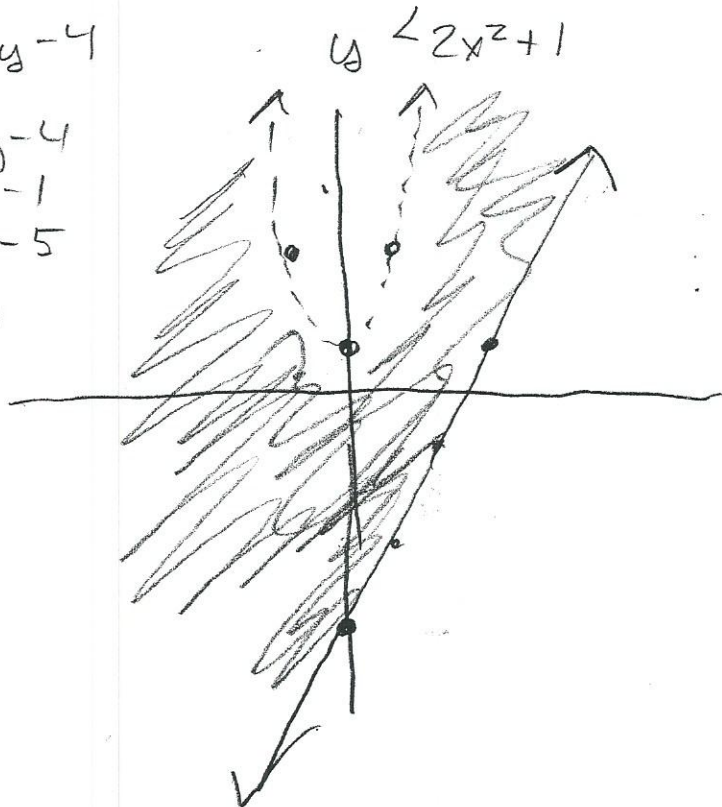
7-28)

$1 + x - y \geq 3x - 2y - 4$

$-x - x$
 $1 - y \geq 2x - 2y - 4$

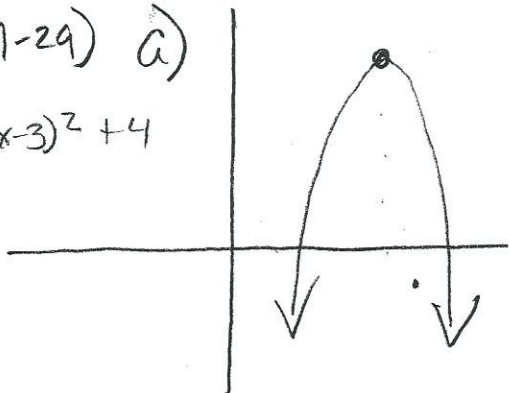
$-1 - 1$
 $-y \geq 2x - 2y - 5$

$+2y + 2y$
 $y \geq 2x - 5$

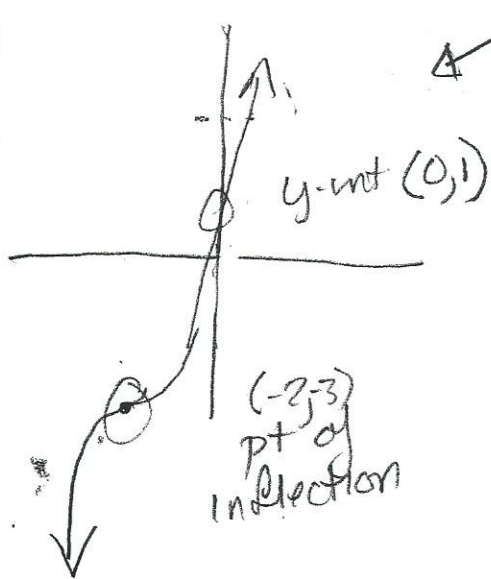


7-29) a)

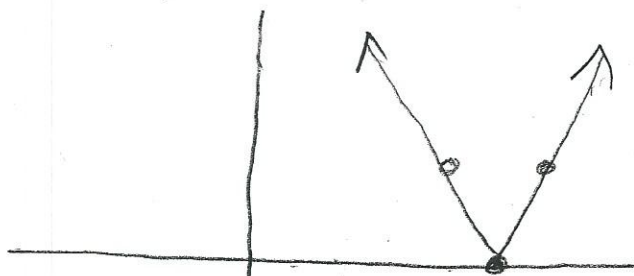
$y = -2(x-3)^2 + 4$



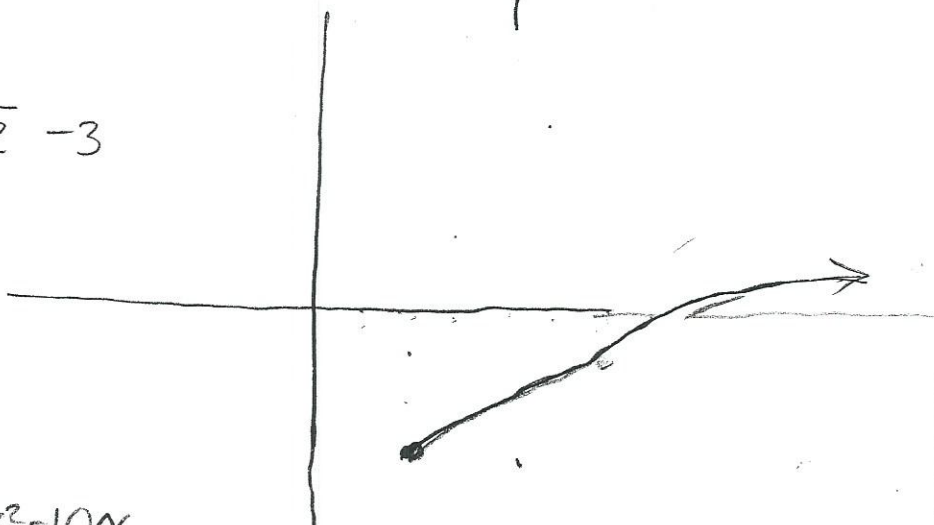
7-29) a) $y = \frac{1}{2}(x+2)^3 - 3$



c) $y = 2|x-5|$



d) $y = \sqrt{x-2} - 3$



7-30) $y + 3 = 8x^2 - 10x$

$y = 8x^2 - 10x - 3$

$y = 8x^2 - 12x + 2x - 3$
 $= 4x(2x-3) + 1(2x-3)$

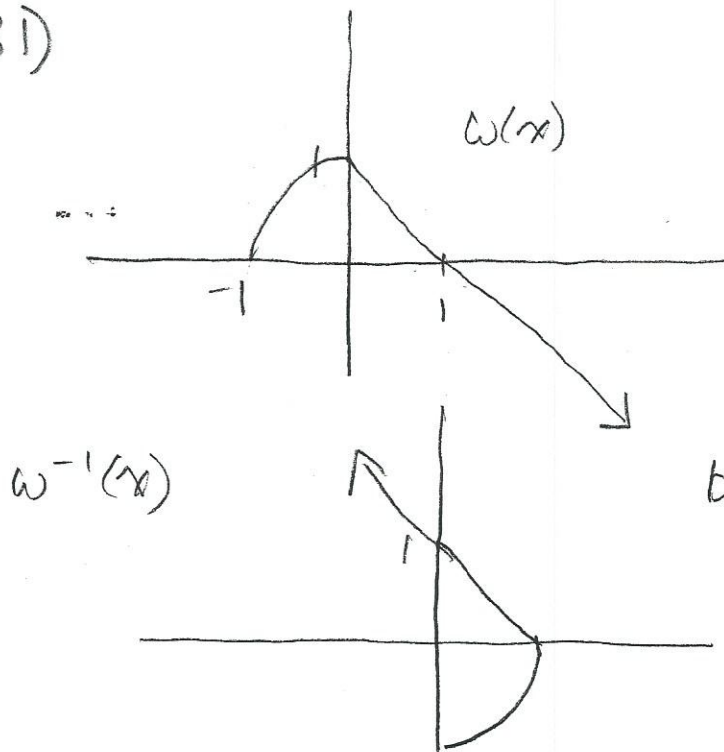
$y = (4x+1)(2x-3)$
 $4x+1=0 \quad 2x-3=0$
 $x = -1/4 \quad x = 3/2$

A.C = $\frac{-24}{-12 \pm 2}$

x int: $(-1/4, 0)$
 $(3/2, 0)$

$y\text{-int} = -3 \quad (0, -3)$

7-31)



b) No a function for the inverse.
 fails vertical line test
 If $x=0$, 2 outputs

7-32)

$$r + b + g = 40$$

$$b + 5 = r$$

$$2g = r$$

$$\textcircled{1} \quad r + b + g = 40$$

$$\textcircled{2} \quad r - b = 5$$

$$\textcircled{3} \quad r - 2g = 0$$

$$\textcircled{1} - \textcircled{2} \quad \begin{array}{r} r + b + g = 40 \\ r - b = 5 \\ \hline 2b + g = 35 \end{array}$$

$$2(2r + g = 45)$$

$$\textcircled{3} \quad r - 2g = 0$$

$$4r + 2g = 90$$

$$\begin{array}{r} 5r = 90 \\ \hline 5 \quad 5 \\ r = 18 \end{array}$$

$$\frac{2g = 18}{2} \quad \frac{18}{2}$$

$$g = 9$$

$$b + 5 = 18$$

$$b = 13$$

18 red

13 blue

9 green