

$$\textcircled{1} \quad -4 \mid \begin{array}{ccc} 1 & -1 & -12 \\ \downarrow & -4 & 20 \\ \hline 1 & -5 & 8 \end{array}$$

Slant  $y = x - 5$

VA  $x = -4$

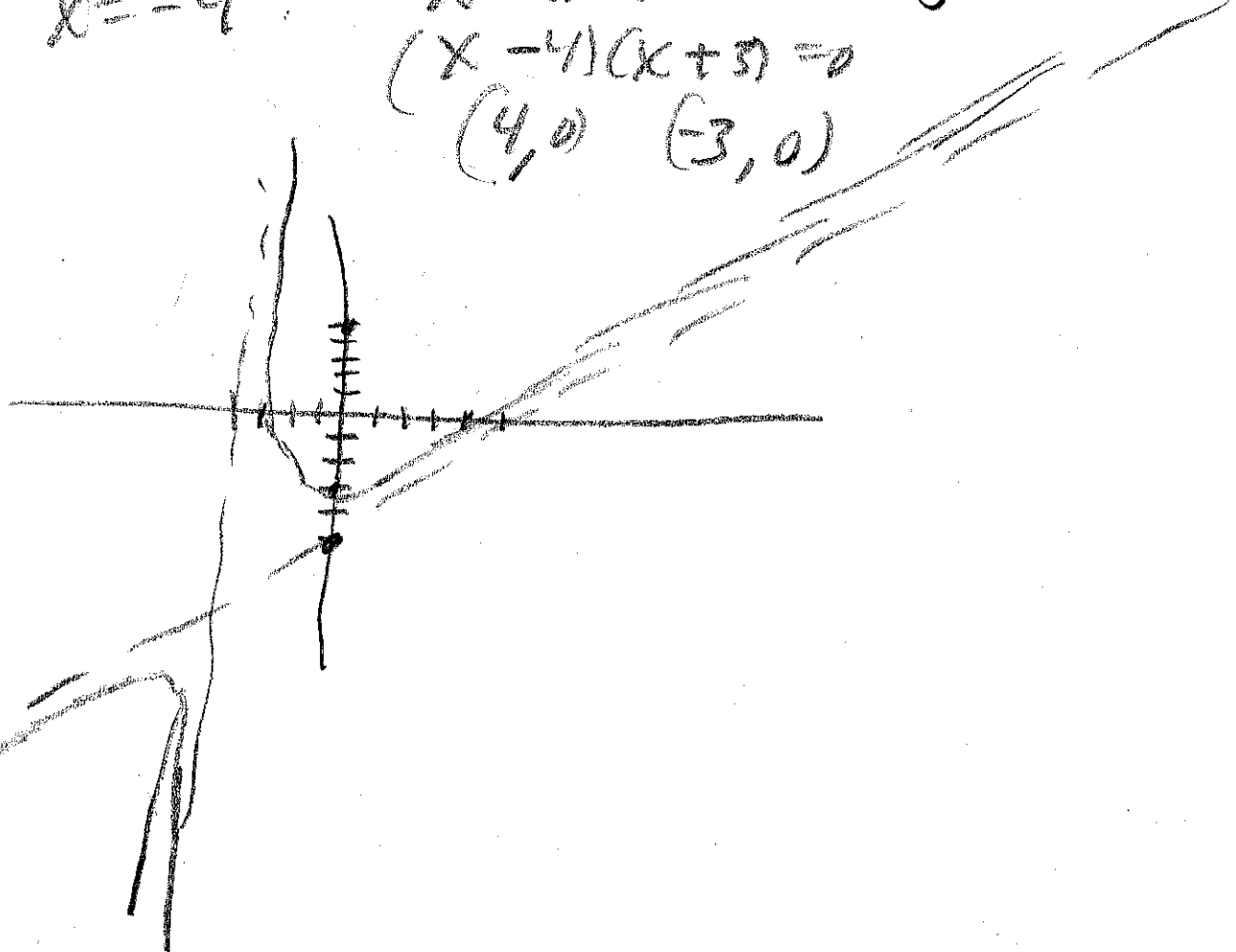
$$x^2 - x - 12 = 0$$

$$(x - 4)(x + 3) = 0$$

$(4, 0) \quad (-3, 0)$

$$y - mT = (9 - 3)$$

PS 10 Key



$$\textcircled{2} \quad 4 \mid \begin{array}{cccc} 1 & -6 & 7 & 4 \\ \downarrow & 6 & 4 & -4 \\ \hline 1 & -2 & -1 & 0 \end{array}$$

$$(x - 4)(x^2 - 2x - 1)$$

$$x = \frac{2 \pm \sqrt{4 - 4(1)(-1)}}{2(1)}$$

$x = 4$   
 $x = 1 - \sqrt{2}$   
 $x = 1 + \sqrt{2}$

$$\frac{2 \pm \sqrt{8}}{2} \quad 1 \pm \sqrt{2}$$

$$\left(1 + \frac{11.6}{4}\right)^{4T}$$

$$(1.04)^{4T} \rightarrow 50000(1.1699)^T$$

$$50000(1.1699)^T$$

$$1699^T \log_{1.1699}(20) = T$$

$$\approx 19.1 \text{ yrs}$$

$$e^{-0.03T}$$

$$800b^T$$

$$e^{-0.03}$$

$$= b \quad b = .9704$$

$$(.9704)^T$$

$$1 - .9704 = .0296$$

$$(.9704)^{150}$$

$$2.96\%$$

$$(5) y = ab^x + k \quad 0,64 \quad k = 6$$

$$y = ab^x + 6 \quad (-25, 30)$$

$$64 = ab^0 + 6$$

$$58 = a$$

$$y = 58b^x + 6$$

$$30 = 58b^{-25} + 6$$

$$\frac{24}{1} = \frac{58}{b^{25}}$$

$$b^{25} = \frac{58}{24}$$

$$b = \sqrt[25]{\frac{58}{24}}$$

$$b \approx 1,0359$$

$$y = 58(1,0359)^x + 6$$

$$(6) \ln(4x-3) = 15 - \ln(x-5)$$

$$\ln(4x-3) + \ln(x-5) = 15$$

$$\ln(4x-3)(x-5) = 15$$

$$(4x-3)(x-5) = e^{15}$$

$$4x^2 - 23x + 15 = e^{15}$$

$$4x^2 - 23x + 15 - e^{15} = 0$$

↑  
a

↑  
b

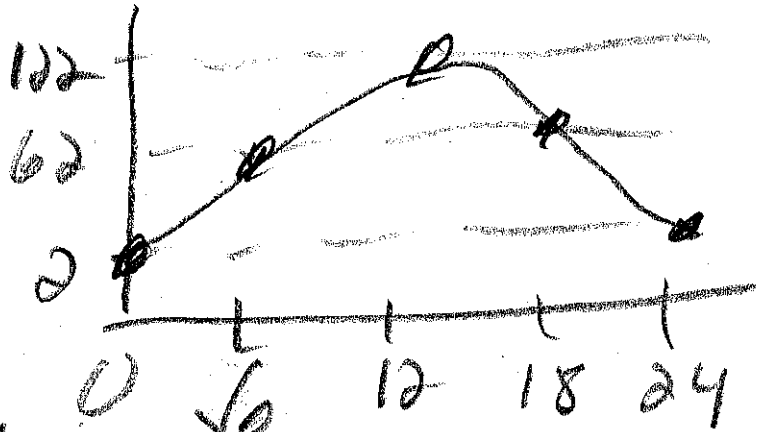
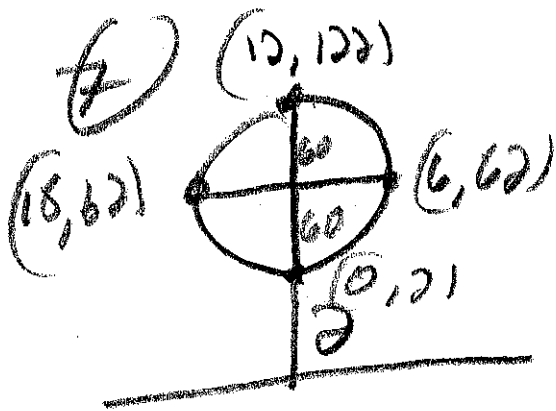
c

use quad eq

$$906,599 = x$$

only  
solution

-901,149 is extraneous



Amp = 60

cosine (reflected around midline)

No phase shift

Period = 24 so  $b = \frac{2\pi}{24} \rightarrow \frac{\pi}{12}$   
 midline  $y = 62$

Continuous

$$h(t) = -60 \cos\left(\frac{\pi}{12}t\right) + 62$$

$$h(10) = -60 \cos\left(\frac{\pi}{12}(10)\right) + 62$$

$$= -60 \cos\left(\frac{10\pi}{12}\right) + 62$$

$$= -60 \cos\left(\frac{5\pi}{6}\right) + 62$$

$$= -60 \left(-\frac{\sqrt{3}}{2}\right) + 62$$

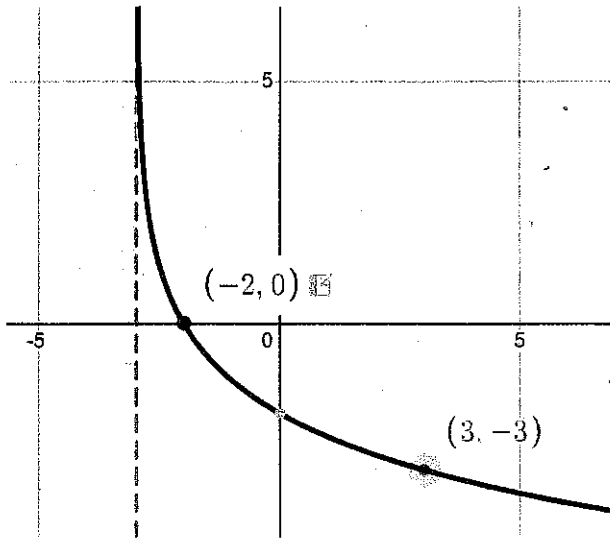
$$= 30\sqrt{3} + 62$$

$$\approx 114 \text{ meren}$$

You may complete your work for q8 – q10 on these pages

For each graph, write an appropriate function as indicated:

Q8.



Log  $f(x)$  VA @  $x = -3$   
 not reflected around  
 VA

$$y = a \log(x+3) + k$$

f.o.d

$$0 = a \log(-2+3) + k$$

$$0 = a \log 1 + k$$

$$0 = k$$

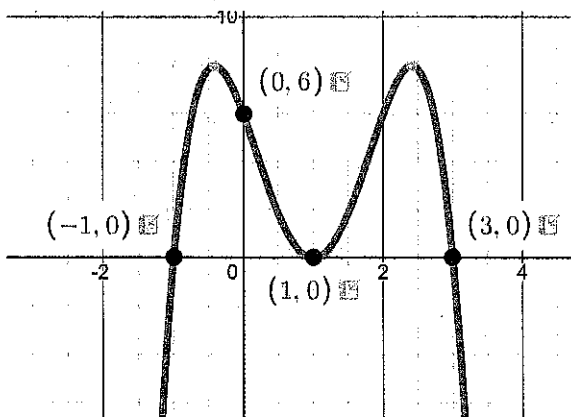
$$(3, -3) \quad -3 = a \log(3+3)$$

$$-3 = a \log 6$$

$$-\frac{3}{\log 6} = a$$

$$y = -\frac{3}{\log 6} \log(x+3)$$

Q9.



Polynomial

Zeros @  $x = -1$   
 $x = 1$  DBL ROOT  
 $x = 3$

$$y = a(x+1)(x-1)^2(x-3)$$

y.int (0, 6)

$$6 = a(1)(1)(-3)$$

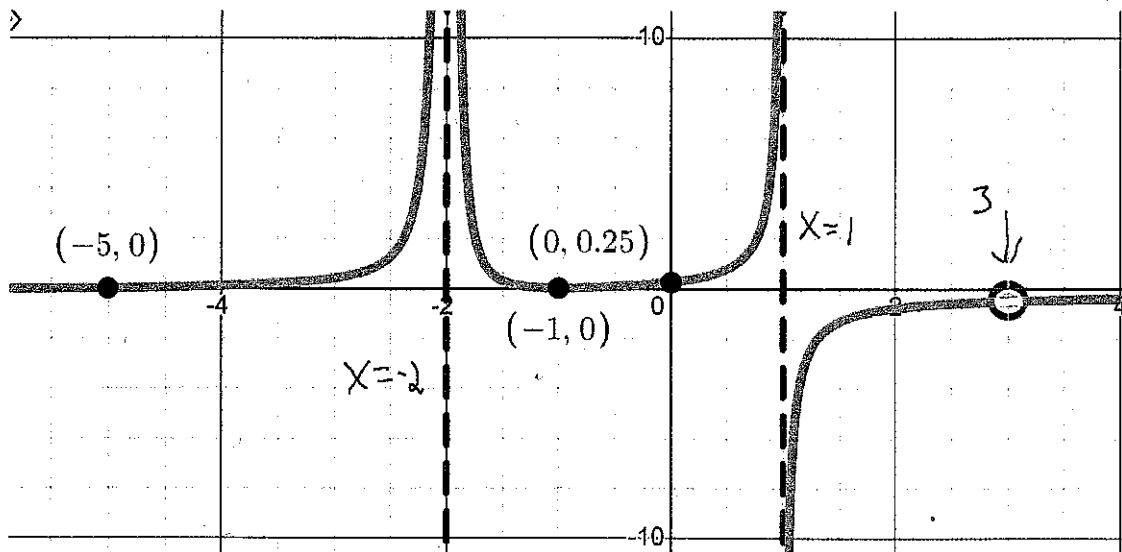
$$-2 = a$$

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

You may complete your work for q8 - q10 on these pages

Rational  
f(x)

10.



VA  
 $x = -2$   
Acts like  
 $\frac{1}{x^2}$

VA  
 $x = 1$   
acts like  $\frac{1}{x}$

Zeros @  $x = -5$   $x = -1$  Dbl Root

$$\frac{(x+5)(x+1)^2}{(x+2)^2(x-1)}$$

$y_{int} = (0, \frac{1}{4})$

$$\frac{1}{4} = \frac{a(5)(1)}{4(-1)} \quad a = -\frac{1}{5}$$

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