

Pg. 435 1, 4, 7, 8 3-1  
 $f(x) = -(x+1)^2 + 4$

#1  $f(x) = -(x-1)^2 + 4$

Vertex  $(-1, 4)$  opens down

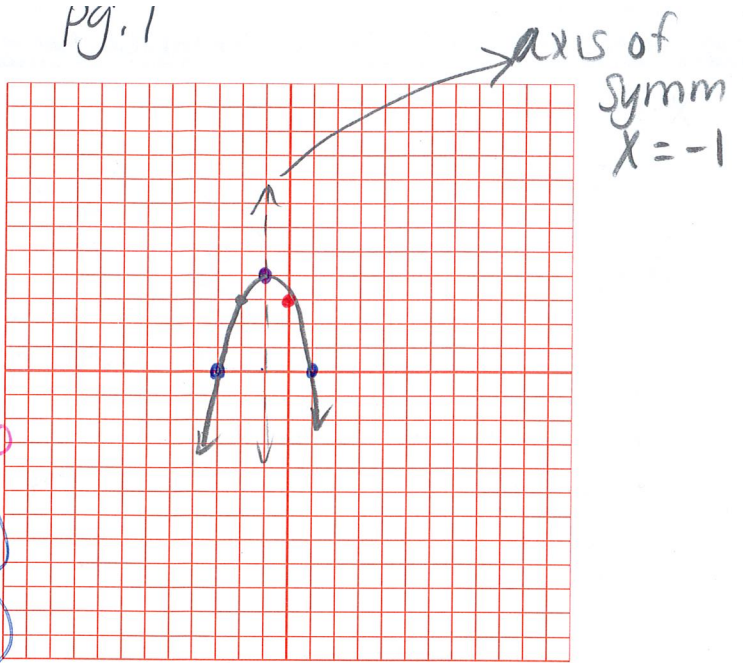
X-intercept  $(1, 0)$   $(-3, 0)$

$0 = -(x+1)^2 + 4$   
 $-4 = -(x+1)^2$   $(1, 0)$   $(-3, 0)$

$\frac{-4}{-1} = \frac{-(x+1)^2}{-1}$   $x+1 = 2$   $x = 1$

$\sqrt{4} = \sqrt{(x+1)^2}$   $x+1 = -2$   $x = -3$

Y-intercept  $(0, 3)$   $y = -(0+1)^2 + 4$   
 $y = -1 + 4 = 3$



#4  $f(x) = 2x^2 - 4x - 6$   
 opens up vertical stretch

1) Find vertex  $(-\frac{b}{2a}, p/c)$

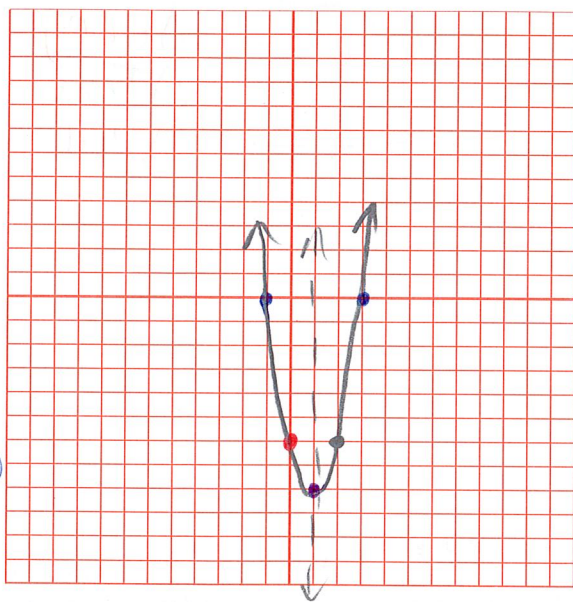
$\frac{4}{2(2)}$   $(1, -8)$  vertex

$y = 2(1)^2 - 4(1) - 6$   
 $y = 2 - 4 - 6$   $y = -8$

2) Find x-intercepts  $0 = 2x^2 - 4x - 6$   $2(x^2 - 2x - 3)$   
 $2(x-3)(x+1)$   
 $x = 3$   $x = -1$

$(3, 0)$   $(-1, 0)$

3) Find y-intercept  $(0, -6)$



axis of Symm  
 $X = 1$

#7  $f(x) = -.025x^2 + x + 6$

receiver is 40 yds down field

a) what is Max  $x \rightarrow$  yds down field

Vertex  $(\frac{-b}{2a}, p/c)$   $\frac{-1}{2(-.025)} (20, 16)$

$y = -.025(20)^2 + (20) + 6$   
 $-10 + 20 + 6$

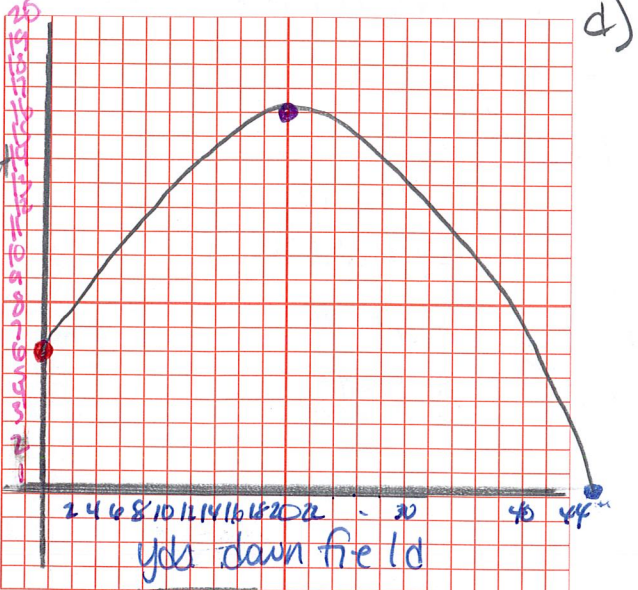
The max height the ball reached was  $16$  ft high and  $20$  yds down field

b) what height did he pass the ball  $\leftarrow$  asking to find the starting pt or y-intercept  $(0, 6)$

The quarterback threw ball from 6 ft high

c) how far down field find x-intercept

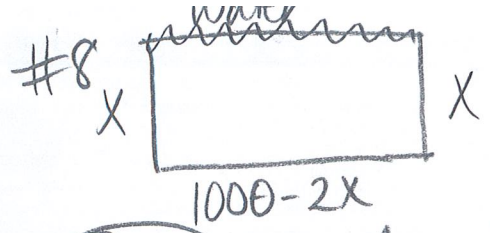
$0 = -.025x^2 + x + 6$  use quad formula  
 $45.3$  yds down field hit ground  $x = \frac{-1 \pm \sqrt{12 - 4(-.025)(6)}}{2(-.025)}$



d)



Perimeter needs to be 1000



a) Max Area  
So find vertex

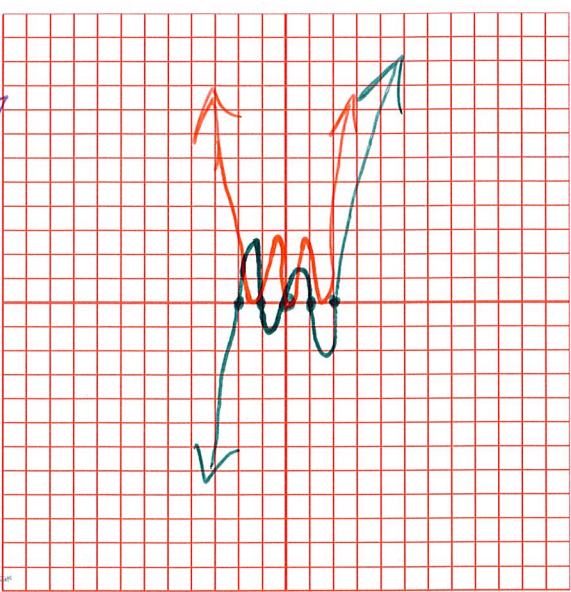
$(-\frac{b}{2a}, f(c))$   
 $\frac{-1000}{2(-2)} (250, 125,000)$

$X(1000-2X) = \text{Area}$   
 $1000X - 2X^2 = f(x)$   
 $-2x^2 + 1000x + 0 = f(x)$

The length of fence needs to be 250 yds

The max area will be 125,000 Square yds.

$-2(250)^2 + 1000(250)$   
 $-125000 + 250000$   
 $125,000$



3-2 10-13 15, 26

10)  $f(x) = -x^3 + x^2 + 2x$  c

a) green

11)  $f(x) = x^6 - 6x^4 + 9x^2$  b

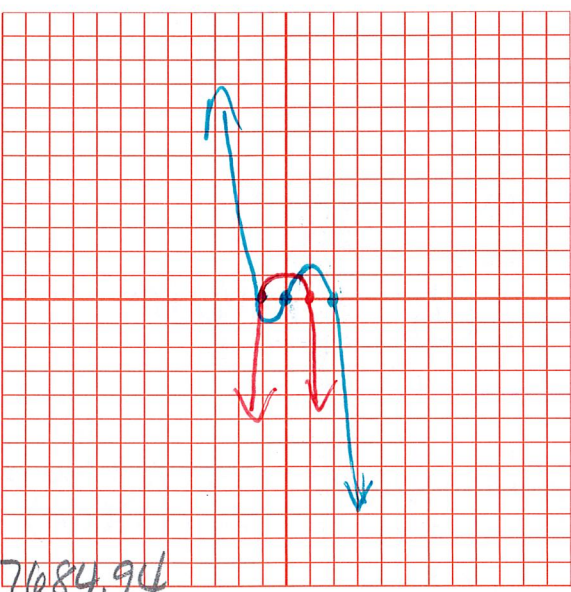
b) orange

12)  $f(x) = x^5 - 5x^3 + 4x$  a

c) teal

13)  $f(x) = -x^4 + 1$  d

d) Red

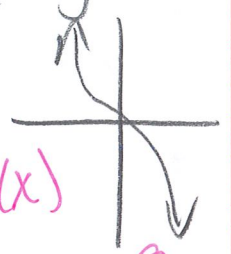


#15  $f(x) = -.87x^3 + 0.35x^2 + 81.62x + 7684.94$

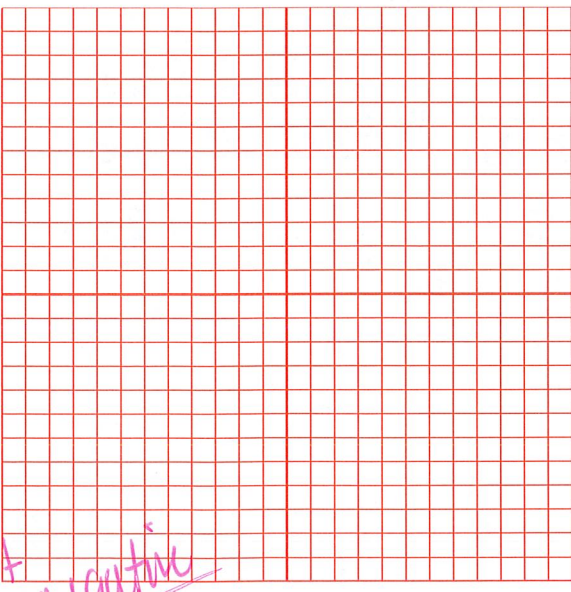
$f(x)$  = # of thefts in thousands after X years after 1987

This is a John Travolta with left hand so it rises to the left and falls to the right so No so eventually there would be a

Negative # of thefts  $f(x)$  which is not possible



thrifts are y can't be negative





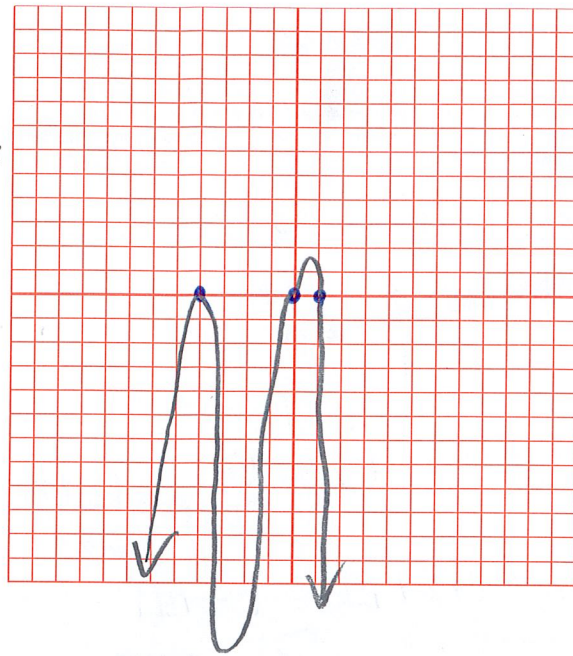
3-2 Continued

#26  $f(x) = -x^3(x+4)^2(x-1)$

Graph. First find End behavior  
 degree is  $3+2+1=6$  field goal opening  
 down

Now find Roots & Multiplicities  
 $x=0$  Mult 3 go right through  
 $x=-4$  Mult 2 love tap  
 $x=1$  go right through

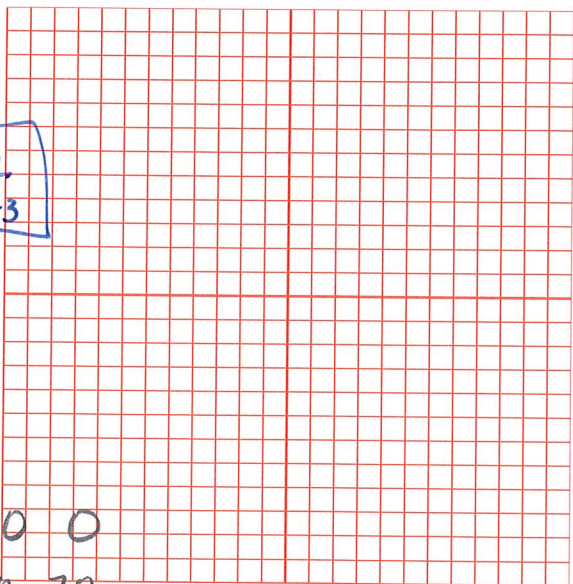
y-intercept set  $x=0$   
 $-(0)^3(0+4)^2(0-1)$   
 $(0)(16)(-1)$  28



3-3 Renew pg. 436 31, 32, 34

28)  $(10x^3 - 26x^2 + 17x - 13) \div (5x - 3)$

$$\begin{array}{r}
 2x^2 - 4x + 1 \text{ R-10} \\
 5x-3 \overline{) 10x^3 - 26x^2 + 17x - 13} \\
 \underline{-10x^3 - 6x^2} \phantom{+ 17x - 13} \\
 -20x^2 + 17x \phantom{- 13} \\
 \underline{-20x^2 + 12x} \phantom{- 13} \\
 -5x - 13 \\
 \underline{-5x - 3} \\
 -10
 \end{array}$$



#31  $3x^4 - 2x^2 - 10x$

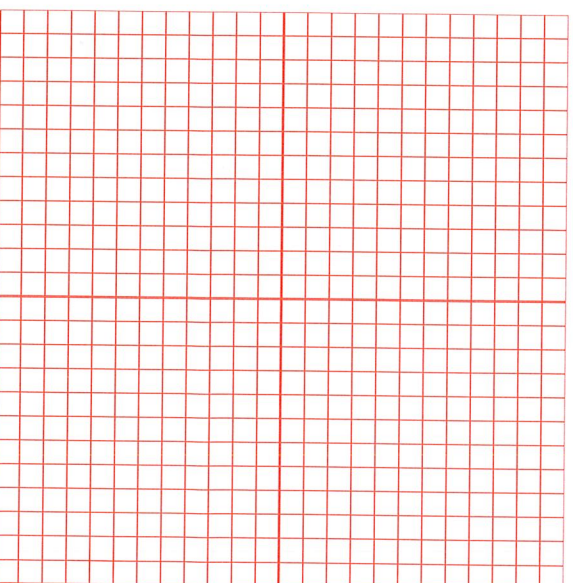
$$\begin{array}{r}
 x-2 \\
 3x^4 + 0x^3 - 2x^2 - 10x + 0 \\
 \hline
 3x^3 + 6x^2 + 10x + 10 + \frac{20}{x-2}
 \end{array}$$

$3x^3 + 6x^2 + 10x + 10 + \frac{20}{x-2}$

32)  $f(x) = 2x^3 - 7x^2 + 9x - 3$

$$\begin{array}{r}
 -13 \overline{) 2 \quad -7 \quad 9 \quad -3} \\
 \underline{-26 \quad 429 \quad -5694} \\
 2 \quad -33 \quad 438 \quad -5697
 \end{array}$$

$f(-13) = -5697$   
 $(-13, -5697)$





34)  $x^3 - 17x + 4 = 0$

given 4 is a root  
so  $x-4$  is a factor if 4 is a root

$$\begin{array}{r|rrrr}
 4 & 1 & 0 & -17 & 4 \\
 & & 4 & 16 & -4 \\
 \hline
 & 1 & 4 & -1 & 0
 \end{array}$$

factors  
 $(x-4)(x^2 + 4x - 1) = 0$  complete the square

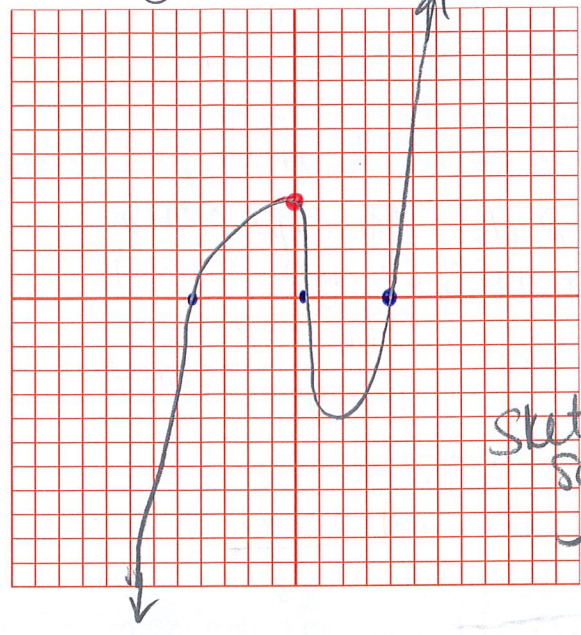
$(x-4) x^2 + 4x + [4] = 1 + [4]$

$x=4$  Root  
 $\sqrt{(x+2)^2} = \sqrt{5}$   $\begin{matrix} x^2 & x & 1 \\ x & x & 1 \end{matrix}$   
 $x+2 = \pm\sqrt{5}$

3 Roots  $4 \pm -2 \pm \sqrt{5}$

$x=4$   $x=0.24$   $x=-4.24$

y-intercept 4



Sketch something like this

