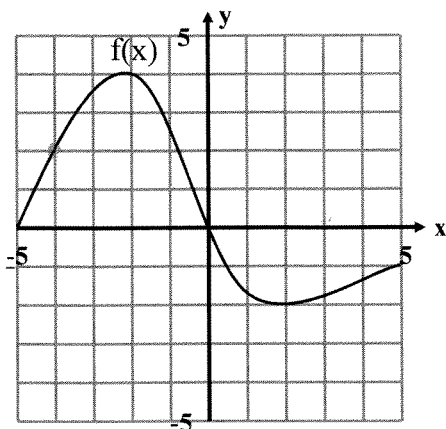


4. Given this graph of the function  $f(x)$ :



Find:

a.  $f(-4) = 2$

b.  $f(0) = 0$

c.  $f(3) \doteq -1.7$

d.  $f(-5) = 0$

e.  $x$  when  $f(x) = 2$   
 $= -4$

f.  $x$  when  $f(x) = 0$   
 $= 0$

5. Find an equation of a linear function given  $h(1) = 6$  and  $h(4) = -3$ .

HINT: Think "What has been given?" "What do I need to write a linear equation?"

Given 2 points  $(1, 6)$  and  $(4, -3)$   
 For a linear function you must determine slope and y-int

Slope  $M = \frac{-3-6}{4-1}$   
 $= \frac{-9}{3}$   
 $= -3$

y-int  $y = mx + b$   
 $6 = -3(1) + b$   
 $6 = -3 + b$   
 $9 = b$

equation  
 $f(x) = -3x + 9$

6. Determine the maximum result if  $f(x) = -3x^2 + 24x$  is a quadratic that opens down.

HINT: The maximum occurs halfway between the x-intercepts.

THINK: How do I find the intercepts? How do I find the max?

Challenge: Use function notation to find your answer.

To find intercepts: factor  $\rightarrow$  find zeros

$$f(x) = -3x(x-8)$$

$$\therefore x = 0 \quad \text{AND} \quad x = 8$$

Axis of symmetry is halfway between 0 and -8  
 midpoint:  $\frac{0+8}{2}$   
 $= \frac{8}{2}$   
 $= 4$

To find vertex, sub in  $x = -4$   
 $f(4) = -3(4)^2 + 24(4)$   
 $= -3(16) + 96$   
 $= 48$

$\therefore$  The max is 48,