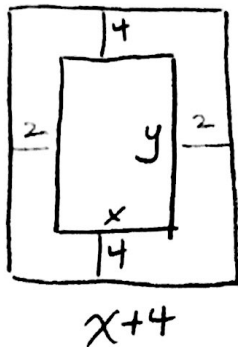


Solutions

13, 14, 16  
pg 231-232; ~~13, 16, 23~~ page ~~248; 59, 62~~

(13)



$$xy = 50 \rightarrow y = \frac{50}{x}$$

$$A = (x+4)(y+8)$$

$$A = (x+4)\left(\frac{50}{x} + 8\right)$$

$$A = 50 + 8x + \frac{200}{x} + 32$$

$$A = 8x + \frac{200}{x} + 82$$

$$A' = 8 - \frac{200}{x^2} = 0$$

$$8x^2 = 200$$

$$x^2 = 25$$

$$x = 5$$

$$y = \frac{50}{5} = 10$$

$$5+4 = 9$$

$$10+8 = 18$$

9 in wide  
by  
18 in high

(14)  $s = -16t^2 + 96t + 112$

a)  $v = s' = -32t + 96$

$v(0) = 96 \text{ ft/sec}$

b) Max height occurs when  $v = 0 \Rightarrow -32t + 96 = 0$   
 $t = 3 \text{ sec}$   
 $s(3) = 256 \text{ ft}$

The MAX height is 256ft when  $t = 3$

c)  $0 = -16t^2 + 96t + 112$   
 $0 = t^2 - 6t - 7$   
 $0 = (t+1)(t-7)$   
 $t = -1, 7$

$v(7) = -128 \text{ ft/sec}$