

(") x - .

$$\frac{100+20}{100} \cdot x = 1.2x$$

(t)

20% -

(v)

(s)

- s = vt

" s	" v	t	B - A -	
120	x	$\frac{120}{x}$		
60	x	$\frac{60}{x}$		
-	-	$\frac{6}{60} = 0.1$		
60	1.2x	$\frac{60}{1.2x}$		

$$\frac{120}{x} = \frac{60}{x} + 0.1 + \frac{60}{1.2x} :$$

$$\frac{1.2 \cdot 120}{x} = \frac{1.2 \cdot 60}{x} + \frac{1.2x}{1.2x} \cdot 0.1 + \frac{1 \cdot 60}{1.2x} / 1.2x$$

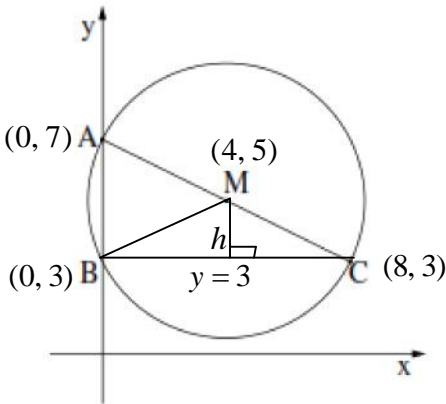
$$144 = 72 + 0.12x + 60$$

$$12 = 0.12x$$

$$\boxed{x = 100}$$

. " 100

:



$\cdot \sqrt{20}$

M(4, 5)

$\cdot x = 0$

$\cdot (x - a)^2 + (y - 5)^2 = 20$

$\cdot (6, 1)$

$\cdot a$

$(6 - a)^2 + (1 - 5)^2 = 20$

$(6 - a)(6 - a) + 16 = 20$

$36 - 6a - 6a + a^2 + 16 = 20$

$a^2 - 12a + 32 = 0$

$a_{1,2} = \frac{12 \pm 4}{2 \cdot 1}$

$a_1 = \frac{12 + 4}{2} = \frac{16}{2} = 8, \quad a_2 = \frac{12 - 4}{2} = \frac{8}{2} = 4$

$\cdot a = 4 \quad a = 8 :$

$\cdot (x - 4)^2 + (y - 5)^2 = 20$

$y - \quad \quad \quad B - A \quad (1)$

$(0 - 4)^2 + (y - 5)^2 = 20$

$16 + (y - 5)(y - 5) = 20$

$16 + y^2 - 5y - 5y + 25 = 20$

$y^2 - 10y + 21 = 0$

$y_{1,2} = \frac{10 \pm 4}{2 \cdot 1}$

$y_1 = \frac{10 + 4}{2} = \frac{14}{2} = 7, \quad y_2 = \frac{10 - 4}{2} = \frac{6}{2} = 3$

A(0, 7)

B(0, 3)

$\cdot AC$

$\cdot M(4, 5),$

$$\left. \begin{aligned} 4 &= \frac{x_C + 0}{2} \\ 5 &= \frac{y_C + 7}{2} \end{aligned} \right\} \boxed{C(8, 3)}$$

$\cdot C(8, 3), B(0, 3), A(0, 7) :$

$\cdot B(0, 3) \quad y - \quad \quad \quad C(8, 3) \quad y - \quad (2)$

$\cdot (y = 3) \quad x - \quad \quad \quad ,$

$\cdot y_M - 3 = 5 - 3 = 2 \quad - \quad BC \quad (h) \quad (3)$

$\cdot 2 \quad MBC \quad BC \quad :$

"

$$f(x) = x - 4\sqrt{x}$$

$$(\quad - \quad) x \geq 0 :$$

$$. x \geq 0 :$$

$$y = 0 \quad , x$$

$$0 = x - 4\sqrt{x}$$

$$4\sqrt{x} = x \quad /(\quad)^2$$

$$16x = x^2 \quad \rightarrow x^2 - 16x = 0 \quad \rightarrow x(x - 16) = 0$$

$$x_1 = 0 \rightarrow (0,0) \quad \rightarrow 4\sqrt{0} = 0 \rightarrow 0 = 0 \text{ o.k.}$$

$$x_2 = 16 \rightarrow (16,0) \quad \rightarrow 4\sqrt{16} = 16 \rightarrow 16 = 16 \text{ o.k.}$$

$$. (16,0) \quad , (0,0) :$$

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

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

$$0 = 1 - \frac{2}{\sqrt{x}} \quad / \cdot 2\sqrt{x} \quad \rightarrow 0 = \sqrt{x} - 2$$

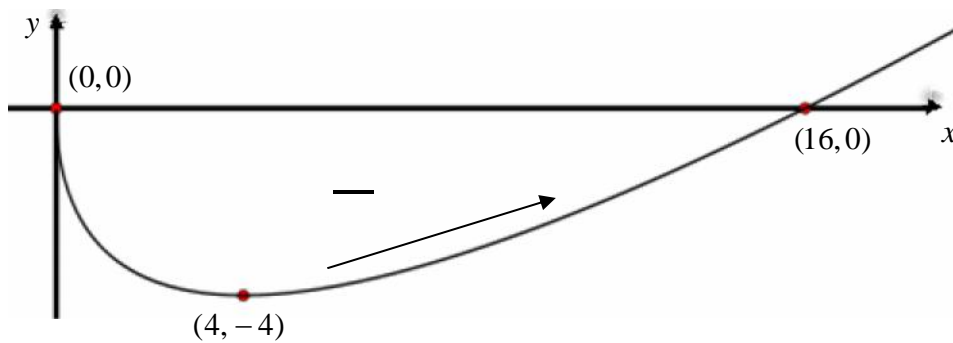
$$2 = \sqrt{x}$$

$$\boxed{x=4} \rightarrow f(4) = 4 - 4\sqrt{4} = -4 \rightarrow (4, -4)$$

0	3	4	5	x
	-	0	+	y'
	↘	Max	↗	

$$f'(3) = 1 - \frac{4}{2\sqrt{3}} < 0, \quad f'(5) = 1 - \frac{4}{2\sqrt{5}} > 0$$

$$. (4, -4) :$$



$$(0 < x < 16) x -$$

$$f(x) < 0.$$

$$(x > 4)$$

$$f'(x) > 0$$

$$. x = 5 :$$

$y = -x^2 + 8x - 16$

$y' = -2x + 8$

$0 = -2x + 8$

$2x = 8$

$x = 4 \rightarrow y = -4^2 + 8 \cdot 4 - 16 = 0 \rightarrow (4, 0)$

• () (4, 0) :

, A x -

$y = -x - 8$

$$\begin{cases} y = -x^2 + 8x - 16 \\ y = -x - 8 \end{cases}$$

$-x - 8 = -x^2 + 8x - 16 \rightarrow x^2 - 9x + 8 = 0$

$x_{1,2} = \frac{9 \pm 7}{2} \rightarrow x_A = \frac{9-7}{2} = 1, \quad x_B = \frac{9+7}{2} = 8$

:

x = 1 A

S_2	S_1	
$y = 0$	$y = 0$	
$y = -x - 8$	$y = -x^2 + 8x - 16$	
$x = 1$	$x = 4$	x
$x = 0$	$x = 1$	x

$S_2 = \int_0^1 (0 - (-x - 8)) dx = \int_0^1 (x + 8) dx$

$S_2 = \left[\frac{x^2}{2} + 8x \right]_0^1$

$S_2 = \left(\frac{1^2}{2} + 8 \cdot 1 \right) - \left(\frac{0^2}{2} + 8 \cdot 0 \right)$

$S_2 = \frac{1}{2} + 8 \rightarrow \boxed{S_2 = 8.5}$

$S_1 = \int_1^4 (0 - (-x^2 + 8x - 16)) dx = \int_1^4 (x^2 - 8x + 16) dx$

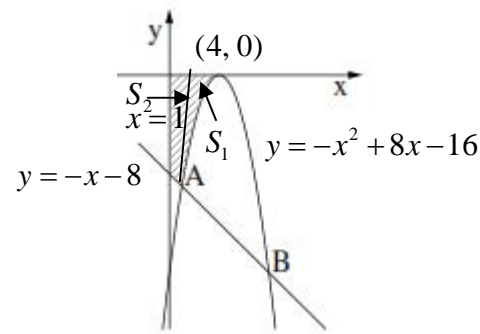
$S_1 = \left[\frac{x^3}{3} - \frac{8x^2}{2} + 16x \right]_1^4$

$S_1 = \left(\frac{4^3}{3} - \frac{8 \cdot 4^2}{2} + 16 \cdot 4 \right) - \left(\frac{1^3}{3} - \frac{8 \cdot 1^2}{2} + 16 \cdot 1 \right)$

$S_1 = \frac{64}{3} - \frac{37}{3} \rightarrow \boxed{S_1 = 9}$

$S = S_1 + S_2 = 9 + 8.5 = 17.5 :$

• " 17.5 :



$$\frac{600}{x}$$

" 600

," (")

x-

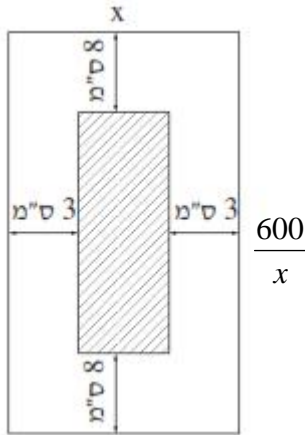
$$\frac{600}{x}$$

$$x - 3 \cdot 2 = x - 6 :$$

(1) .

$$\frac{600}{x} - 8 \cdot 2 = \frac{600}{x} - 16 :$$

$$\frac{600}{x} - 16 : , x - 6 : :$$



השטח המיוצר מקסימום

(2)

: x

$$f(x) = \left(\frac{600}{x} - 16\right) \cdot (x - 6)$$

$$f(x) = 600 - \frac{3600}{x} - 16x + 96$$

$$f(x) = 696 - \frac{3600}{x} - 16x$$

$$f'(x) = \frac{3600}{x^2} - 16$$

$$f'(x) = \frac{3600 - 16x^2}{x^2}$$

$$0 = \frac{3600 - 16x^2}{x^2}$$

$$0 = 3600 - 16x^2 \rightarrow 16x^2 = 3600 \rightarrow x^2 = 225 \rightarrow x = \pm 15$$

$$x = 15 ,$$

0	14	15	16	x
	+	0	-	y'
	↖	Max	↘	

()

$$f'(14) = 3600 - 16 \cdot 14^2 = 464 > 0$$

$$f'(16) = 3600 - 16 \cdot 16^2 = -496 < 0$$

$$\frac{600}{15} = 40cm$$

$$x = 15$$

," 40

" 15

:

$$f'(x) = ax + 4 \quad f(x)$$

$$m = 6, \quad y = 6x + 1, \quad x = 1 \quad f(x)$$

$$6 \quad x = 1 \quad f(x)$$

$$f'(1) = 6$$

$$6 = a \cdot 1 + 4$$

$$\boxed{a = 2}$$

$$a = 2 :$$

$$f'(x) = 2x + 4 :$$

$$: f(x) \quad , f'(x)$$

$$f(x) = \int f'(x) dx$$

$$f(x) = \int (2x + 4) dx$$

$$f(x) = \frac{2x^2}{2} + 4x + c$$

$$\boxed{f(x) = x^2 + 4x + c}$$

$$: \quad x = 3 \quad f(x) \quad (3, 0)$$

$$0 = 3^2 + 4 \cdot 3 + c$$

$$0 = 21 + c$$

$$c = -21$$

$$\boxed{f(x) = x^2 + 4x - 21}$$

$$f(x) = x^2 + 4x - 21 :$$

$$: x = \quad f(x)$$

$$0 = x^2 + 4x - 21$$

$$x_{1,2} = \frac{-4 \pm 10}{2}$$

$$x_1 = \frac{-4 - 10}{2} = \frac{-14}{2} = -7 \rightarrow \boxed{(-7, 0)}$$

$$x_2 = \frac{-4 + 10}{2} = \frac{6}{2} = 3 \quad (,)$$

$$. (-7, 0) :$$