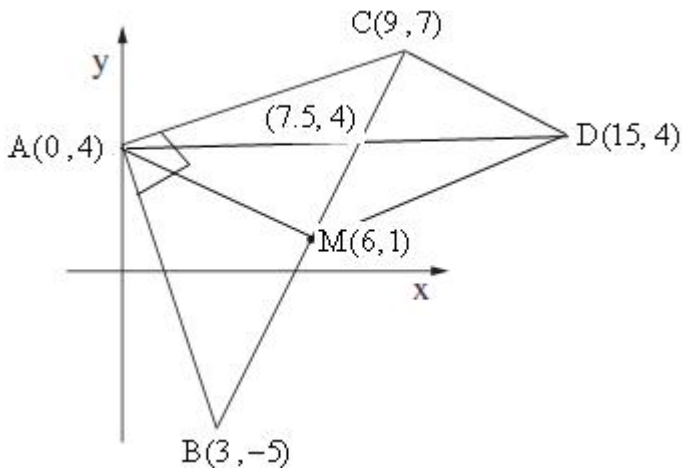


, ( ) "  $x -$  .  
 , "  $x + 50$   
 .  
 $\frac{100 - 20}{100} \cdot (x + 50) = 0.8(x + 50)$  " 20%  
 $\frac{100 - 25}{100} \cdot x = 0.75x$  " 25%

( )	" ( )	(" )	
$5 \cdot 0.8(x + 50) = 4(x + 50)$	$0.8(x + 50)$	5	
$10 \cdot 0.75x = 7.5x$	$0.75x$	10	

, 315  
 $4(x + 50) + 7.5x = 315$  :  
 $4x + 200 + 7.5x = 315$   
 $11.5x = 115 \quad /:11.5$   
 $x = 10 \rightarrow x + 50 = 60$   
 . 10 " 1 60 " 1 :  
 $.5 \cdot 1000 = 5,000$  , " 5 .  
 $.5,000 : 250 = 20$  , 250  
 $.10 \cdot 1000 = 10,000$  , " 10  
 $.10,000 : 500 = 20$  , 500  
 , 20  
 .  
 . 20 :  
 "



$y = mx + 4$  AB (1)

$A(0, 4)$ ,  $x = 0$ ,  $y =$

$A(0, 4)$  :

(AB  $y = mx + 4$ )  $m =$   $A(0, 4) - B(3, -5)$  (2)

$$m = \frac{-5 - 4}{3 - 0} = \frac{-9}{3} = -3$$

$m = -3$  :

AC

$$m_{AC} = \frac{7 - 4}{9 - 0} = \frac{3}{9} = \frac{1}{3}$$

(  $m_{AC} \cdot m_{AB} = \frac{1}{3} \cdot (-3) = -1$  )

$(\sphericalangle A = 90^\circ)$   $\triangle BAC$  :

AMDC

, BC M

$M(6, 1)$ ,  $(\frac{3+9}{2}, \frac{-5+7}{2}) = (6, 1)$

$(\frac{6+9}{2}, \frac{1+7}{2}) = (7.5, 4)$  :

A , D

$$\left. \begin{array}{l} 7.5 = \frac{0 + x_D}{2} \\ 4 = \frac{4 + y_D}{2} \\ 15 = x_D \\ 8 = 4 + y_D \\ y_D = 4 \end{array} \right\} D(15, 4)$$

$D(15, 4)$  :

$(\sqrt{125} \quad O(0,0) \quad ) x^2 + y^2 = 125 \quad , x = 5 \quad .$

$5^2 + y^2 = 125$

$y^2 = 100 \rightarrow y = \pm 10$

$. B(5, -10) , A(5, 10) :$

$. O(0,0) , A(5,10) :$

, AC

$. y - 0 = -2(x - 0) \rightarrow \boxed{y = 2x} : \quad m_{AC} = \frac{10 - 0}{5 - 0} = 2$

$. y = 2x \quad , AC$

.2

, C

OC

$. 2 \cdot m_{CD} = -1 \rightarrow m_{CD} = -\frac{1}{2}$

$. A(5,10)$

$O(0,0) \quad , C$

$$\left. \begin{array}{l} 0 = \frac{5 + x_C}{2} \\ 0 = 5 + x_C \\ x_C = -5 \end{array} \right\} \begin{array}{l} 0 = \frac{10 + y_C}{2} \\ 0 = 10 + y_C \\ y_C = -10 \end{array} \quad C(-5, -10)$$

$y - (-10) = -\frac{1}{2}(x - (-5)) \rightarrow y + 10 = -\frac{1}{2}(x + 5)$

$y + 10 = -\frac{1}{2}x - 2\frac{1}{2} \rightarrow \boxed{y = -\frac{1}{2}x - 12\frac{1}{2}}$

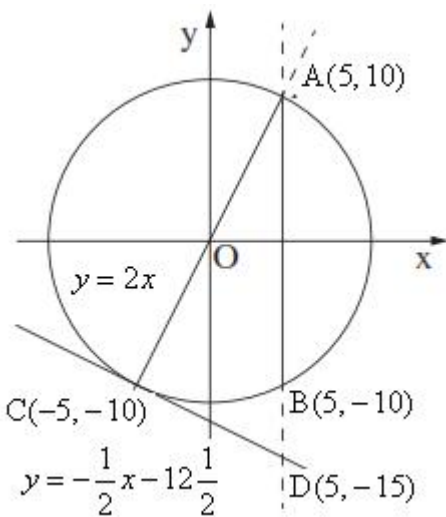
$. y = -\frac{1}{2}x - 12\frac{1}{2} :$

$. D \quad x = 5 \quad y = -\frac{1}{2}x - 12\frac{1}{2} .$

$: \quad x = 5$

$y = -\frac{1}{2} \cdot 5 - 12\frac{1}{2} \rightarrow y = -15 \rightarrow \boxed{D(5, -15)}$

$. D(5, -15) :$



$$y = x^2 - 4\sqrt{x}$$

( - )  $x \geq 0$  :

$x \geq 0$  :

$$y' = 2x - \frac{4}{2\sqrt{x}}$$

$$0 = 2x - \frac{4}{2\sqrt{x}} \quad / \cdot 2\sqrt{x}$$

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

$$4 = 4x\sqrt{x} \quad / : 4$$

$$1 = x\sqrt{x}$$

$$(1)^2 = (x\sqrt{x})^2$$

$$1 = x^2 \cdot x$$

$$1 = x^3$$

$$x = 1 \rightarrow y = 1^2 - 4\sqrt{1} = -3 \rightarrow (1, -3)$$

( $1 = 1\sqrt{1} \rightarrow 1 = 1$  o.k.:

,  $(1, -3)$  ,

:

$$f'(0.5) = 2 \cdot 0.5 - \frac{4}{2\sqrt{0.5}} = -0.8 < 0, \quad f'(2) = 2 \cdot 2 - \frac{4}{2\sqrt{2}} = 2.6 > 0$$

0	0.5	1	2	x
	-	0	+	y'
	↘	Min	↗	

$$x = 1$$

(1, -3) :

:

$0 < x < 1$  :  $x > 1$  :

(0,0)  $f(0) = 0^2 - 4\sqrt{0} = 0$

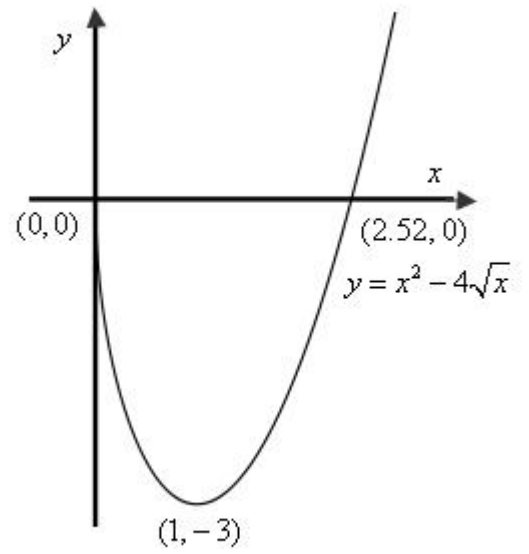
$x = 0$  y

(0,0) :

"

, (1, -3)

(2.52, 0), (0, 0)



$$f(x) = -4x^3 + 6x^2$$

$$f'(x) = -12x^2 + 12x$$

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

$$0 = 12x(-x+1)$$

$$x_1 = 0 \rightarrow (0, 0) \leftarrow y = -4 \cdot 0^3 + 6 \cdot 0^2 = 0$$

$$x_2 = 1 \rightarrow (1, 2) \leftarrow y = -4 \cdot 1 + 6 \cdot 1^2 = 2$$

-1	0	0.5	1	2	x
-	0	+	0	-	y'
↘	<b>Min</b>	↗	<b>Max</b>	↘	

$$f'(-1) = -12 \cdot (-1)^2 + 12 \cdot (-1) = -24 < 0$$

$$f'(0.5) = -12 \cdot 0.5^2 + 12 \cdot 0.5 = 3 > 0$$

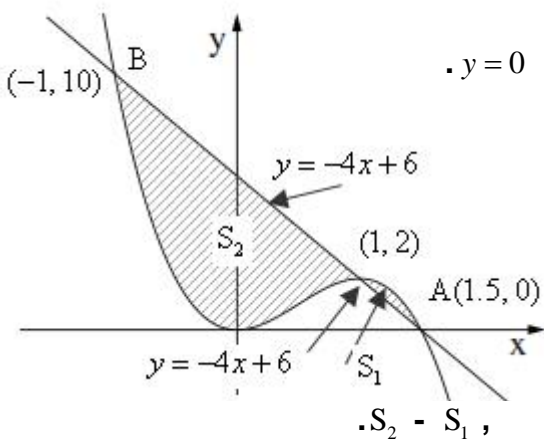
$$f'(2) = -12 \cdot 2^2 + 12 \cdot 2 = -24 < 0$$

x = 1 - ,

x = 0 -

(1, 2) ,

(0, 0 :



. y = 0

x -

$$0 = -4x^3 + 6x^2$$

$$0 = 2x^2(-2x+3)$$

$$x_1 = 0 \rightarrow (0, 0)$$

$$-2x+3=0 \rightarrow -2x=-3 \rightarrow x_2=1.5 \rightarrow \boxed{A(1.5, 0)}$$

. A(1.5, 0) :

$$y = -4x + 6$$

$$-4x^3 + 6x^2 - (-4x + 6) = -4x^3 + 6x^2 + 4x - 6 :$$

- S<sub>1</sub>

$$S_1 = \int_1^{1.5} (-4x^3 + 6x^2 + 4x - 6) dx$$

$$S_1 = \left[ \frac{-4x^4}{4} + \frac{6x^3}{3} + \frac{4x^2}{2} - 6x \right]_1^{1.5}$$

$$S_1 = (-1.5^4 + 2 \cdot 1.5^3 + 2 \cdot 1.5^2 - 6 \cdot 1.5) - (-1^4 + 2 \cdot 1^3 + 2 \cdot 1^2 - 6 \cdot 1)$$

$$S_1 = -2 \frac{13}{16} - (-3)$$

$$S_1 = \frac{3}{16}$$

"

$$-4x + 6 - (-4x^3 + 6x^2) = -4x + 6 + 4x^3 - 6x^2 \quad : \quad -S_2$$

$$S_2 = \int_{-1}^1 (-4x + 6 + 4x^3 - 6x^2) dx$$

$$S_2 = \left[ -\frac{4x^2}{2} + 6x + \frac{4x^4}{4} - \frac{6x^3}{3} \right]_{-1}^1$$

$$S_2 = (-2 \cdot 1^2 + 6 \cdot 1 + 1^4 - 2 \cdot 1^3) - (-2 \cdot (-1)^2 + 6 \cdot (-1) + (-1)^4 - 2 \cdot (-1)^3)$$

$$S_2 = 3 - (-5)$$

$$S_2 = 8$$

$$\frac{3}{16} + 8 = 8\frac{3}{16} :$$

$$\cdot \quad " \quad 8\frac{3}{16} \quad :$$

$$z = \frac{48}{x}, \quad x \cdot z = 48 \quad x, z > 0$$

$x + 3z$  **הסכום** **מינימום**

$$f(x) = x + 3 \cdot \frac{48}{x}$$

$$f(x) = x + \frac{144}{x}$$

$$f'(x) = 1 - \frac{144}{x^2}$$

$$f'(x) = \frac{x^2 - 144}{x^2}$$

$$0 = \frac{x^2 - 144}{x^2} \quad / \cdot x^2$$

$$0 = x^2 - 144$$

$$x^2 = 144$$

$$x = 12 \quad \leftarrow x > 0$$

( )

$$f'(11) = 11^2 - 144 < 0, \quad f'(13) = 13^2 - 144 > 0$$

0	11	12	13	x
	-	0	+	y'
	↘	Min	↗	

$$z = \frac{48}{12} = 4$$

$$x = 12$$

$$x + 3z, \quad x = 12, z = 4 :$$

$$12 + 3 \cdot 4 = 24$$

$$.24$$

:

"