

.() - x .

$$.20x \quad , \quad x \quad , \quad 20 \quad (1)$$

$$.20x \quad 20 \quad :$$

$$. \quad 20\% \quad (2)$$

$$. \frac{100-20}{100} \cdot x = 0.8x \quad , \quad ,$$

$$.0.8x \quad :$$

$$.30 \cdot 0.8x = 24x \quad , \quad 30 \quad .$$

$$100 -$$

$$20x + 100 = 24x \quad :$$

:

$$20x + 100 = 24x$$

$$-4x = -100 \quad /: (-4)$$

$$\boxed{x = 25}$$

. 25 :

$$y = \frac{1}{2}x$$

$$\frac{1}{2}m_{MA} = -1 \rightarrow m_{MA} = \frac{-1}{\frac{1}{2}} \rightarrow m_{MA} = -2$$

$$y - 3 = -2(x - 6) \rightarrow y - 3 = 2x + 12 \rightarrow \boxed{y = -2x + 15} \text{ AM}$$

$$y = -2x + 15 \text{ AM}$$

$$y = 7$$

$$y = -2x + 15$$

$$y = 7$$

$$7 = -2x + 15$$

$$2x = 8$$

$$x = 4 \rightarrow M(4, 7)$$

$$R = \sqrt{(4 - 6)^2 + (7 - 3)^2} = \sqrt{20}$$

$$(x - 4)^2 + (y - 7)^2 = 20$$

$$DC = 9 - 5 = 4 \quad (1)$$

$$x = 0, y = 9 \rightarrow C(0, 9)$$

$$(0 - 4)^2 + (y - 7)^2 = 20 \rightarrow 16 + (y - 7)(y - 7) = 20$$

$$16 + y^2 - 7y - 7y + 49 = 20 \rightarrow$$

$$y^2 - 14y + 45 = 0 \rightarrow y_{1,2} = \frac{14 \pm 4}{2}$$

$$y_1 = \frac{14 + 4}{2} = \frac{18}{2} = 9 \rightarrow C(0, 9)$$

$$y_2 = \frac{14 - 4}{2} = \frac{10}{2} = 5 \rightarrow D(0, 5)$$

$$DC = 9 - 5 = 4$$

$$DC = 4$$

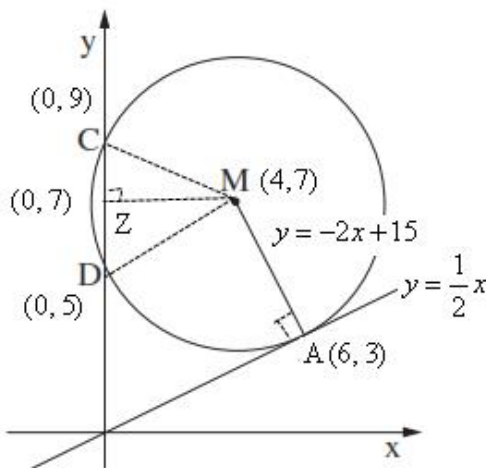
$$(2)$$

$$DC = 4, MZ = 4$$

$$MZ = x_M - x_Z = 4 - 0 = 4$$

$$S_{\triangle CDM} = \frac{DC \cdot MZ}{2} = \frac{4 \cdot 4}{2} = 8 \rightarrow \boxed{S_{\triangle CDM} = 8}$$

$$S_{\triangle CDM} = 8$$



B(1, -4) , A(9, 0) , AB E .

$$\left. \begin{aligned} x_E &= \frac{x_A + x_B}{2} = \frac{9+1}{2} = 5 \\ y_E &= \frac{y_A + y_B}{2} = \frac{0+(-4)}{2} = -2 \end{aligned} \right\} E(5, -2)$$

. AB C(1, 6) ,

$$m_{CE} = \frac{6 - (-2)}{1 - 5} = \frac{8}{-4} = -2 :$$

$$y - 6 = -2(x - 1) \rightarrow y - 6 = -2x + 2 \rightarrow \boxed{y = -2x + 8} :$$

. $y = -2x + 8$ AB :

$$. m_{AB} = \frac{0 - (-4)}{9 - 1} = \frac{4}{8} = \frac{1}{2} , AB .$$

$$\frac{1}{2} m_{GOVA} = -1 \rightarrow m_{GOVA} = \frac{-1}{\frac{1}{2}} \rightarrow m_{GOVA} = -2$$

, C(1, 6)

. $y = -2x + 8$ AB :

AB

$$BC = AC - AB$$

, ($x_B = x_C = 1$) y - BC .

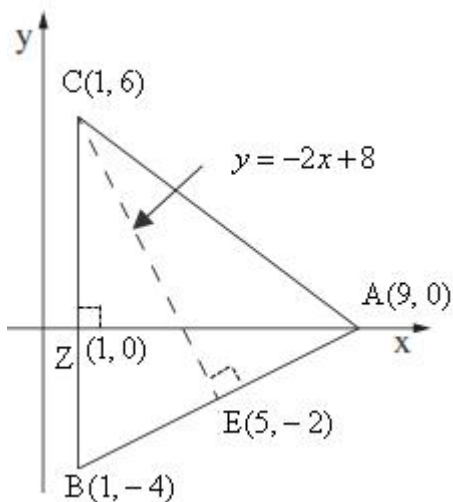
. x - , AZ

$$AZ = x_A - x_Z = 9 - 1 = 8$$

$$BC = y_C - y_B = 6 - (-4) = 10$$

$$S_{\triangle ABC} = \frac{BC \cdot AZ}{2} = \frac{10 \cdot 8}{2} = 40 \rightarrow \boxed{S_{\triangle ABC} = 40}$$

. " 40 ABC :



$$f(x) = x - \frac{1}{x}$$

$$x = 0, x \neq 0$$

$$x \neq 0 :$$

$$y = 0 \quad x -$$

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

$$0 = x^2 - 1$$

$$1 = x^2$$

$$x = \pm 1 \rightarrow (1, 0), (-1, 0)$$

$$(1, 0), (-1, 0) :$$

(1)

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

$$0 = 1 + \frac{1}{x^2} \rightarrow 0 = x^2 + 1$$

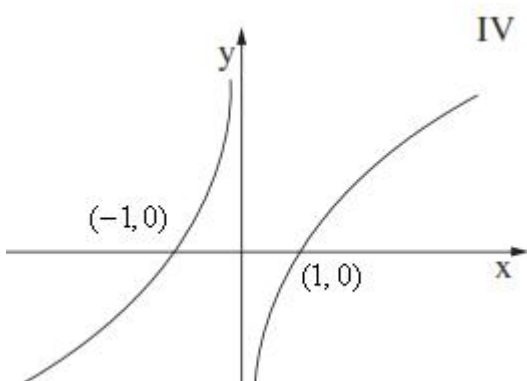
$$x^2 = -1$$

(2)

$$f'(1) = 1 + \frac{1}{1^2} = 2 > 0, \quad f'(-1) = 1 + \frac{1}{(-1)^2} = 2 > 0$$

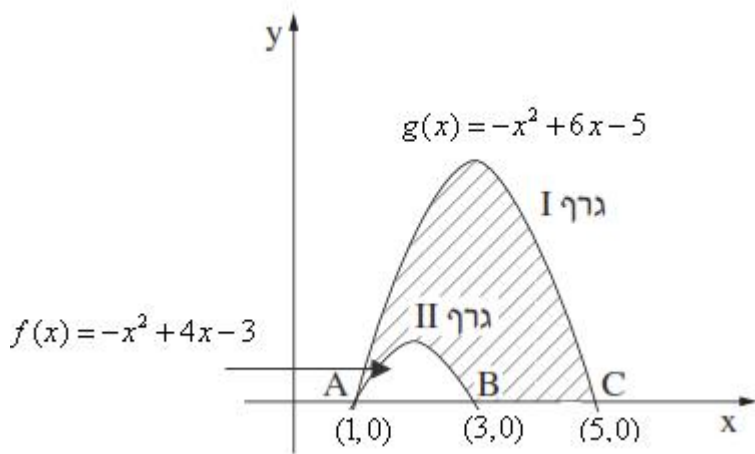
-1	0	1	x
+		+	y'
↗		↗	

$$x < 0 \quad x > 0 \quad :$$



IV
 , x - , y -
 . x < 0 x > 0

..



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

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

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

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

$$x_1 = \frac{4+2}{2} = \frac{6}{2} = 3 \rightarrow (3, 0)$$

$$x_2 = \frac{4-2}{2} = \frac{2}{2} = 1 \rightarrow (1, 0)$$

$$g(x) = -x^2 + 6x - 5$$

$$0 = -x^2 + 6x - 5$$

$$x^2 - 6x + 5 = 0$$

$$x_{1,2} = \frac{6 \pm 4}{2}$$

$$x_1 = \frac{6+4}{2} = \frac{10}{2} = 5 \rightarrow (5, 0)$$

$$x_2 = \frac{6-4}{2} = \frac{2}{2} = 1 \rightarrow (1, 0)$$

.C(5,0) , B(3,0) , A(1,0) :

.	II	B(3,0) , A(1,0)	x -	$f(x) = -x^2 + 4x - 3$.
.	I	C(5,0) , A(1,0)	x -	$g(x) = -x^2 + 6x - 5$	
		.g(x)	I	, f(x)	II :

• y - , B(3,0) , x=3 " , - S₁

$$(-x^2 + 6x - 5) - (-x^2 + 4x - 3) = -x^2 + 6x - 5 + x^2 - 4x + 3 = 2x - 2$$

$$S_1 = \int_1^3 (2x - 2) dx$$

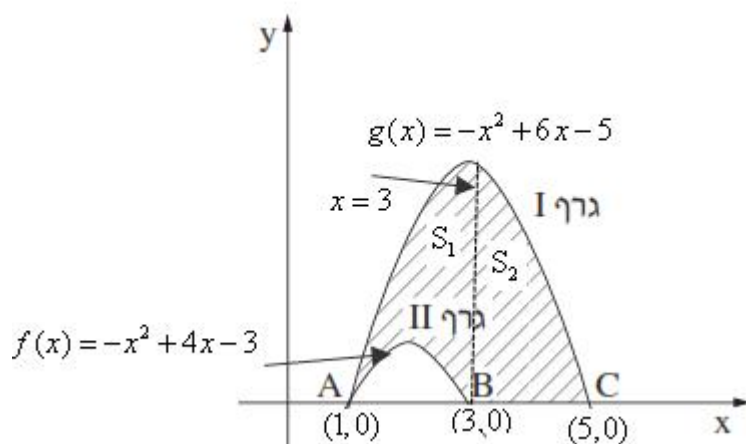
$$S_1 = \left[\frac{2x^2}{2} - 2x \right]_1^3$$

$$S_1 = (3^2 - 2 \cdot 3) - (1^2 - 2 \cdot 1)$$

$$S_1 = 3 - (-1)$$

$$S_1 = 4$$

- S₂



$$(-x^2 + 6x - 5) - (0) = -x^2 + 6x - 5$$

$$S_2 = \int_3^5 (-x^2 + 6x - 5) dx$$

$$S_2 = \left[-\frac{x^3}{3} + \frac{6x^2}{2} - 5x \right]_3^5$$

$$S_2 = \left(-\frac{5^3}{3} + 3 \cdot 5^2 - 5 \cdot 5 \right) - \left(-\frac{3^3}{3} + 3 \cdot 3^2 - 5 \cdot 3 \right)$$

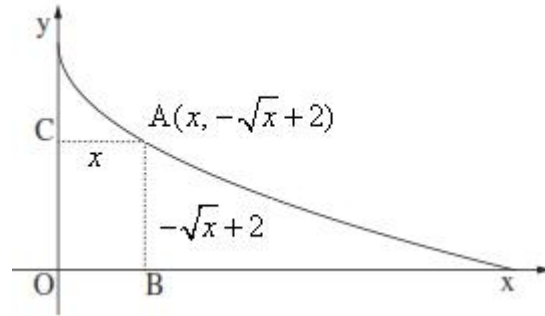
$$S_2 = 8\frac{1}{3} - 3$$

$$S_2 = 5\frac{1}{3}$$

$$5\frac{1}{3} + 4 = 9\frac{1}{3} :$$

$$\cdot " 9\frac{1}{3} :$$

$\cdot A(x, -\sqrt{x}+2)$ $f(x) = -\sqrt{x}+2$ A
 $\cdot -\sqrt{x}+2-0 = -\sqrt{x}+2$ y - AB
 $\cdot x-0 = x$ x - AC



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

$$\cdot 2x - 2\sqrt{x} + 4 \quad \text{ABOC} \quad :$$

• ABOC **היקף המלבן** **מינימום** (1) .

$$P(x) = 2x - 2\sqrt{x} + 4$$

$$P'(x) = 2 - \frac{2}{\sqrt{x}}$$

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

$$0 = 2 - \frac{1}{\sqrt{x}}$$

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

$$\frac{1}{x} = 4$$

$$x = 0.25$$

$$P'(0.2) = 2 - \frac{1}{\sqrt{0.2}} = -0.24 < 0, \quad P'(0.3) = 2 - \frac{1}{\sqrt{0.3}} = 0.17 > 0 \quad :$$

0.2	0.25	0.3	x
-	0	+	P'(x)
↘	Min	↗	

• ABOC $x = 0.25$:

$$P(0.25) = 2 \cdot 0.25 - 2\sqrt{0.25} + 4 = 3.5 \quad : \quad x = 0.25 \quad (2)$$

• 3.5 ABOC :

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