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$$\frac{300x}{100(75-x)} + \frac{600}{11100} = \frac{75-x}{x}$$

.

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$$300x + 100(75 - x) + 600 = 11100 :$$

$$300x + 7500 - 100x + 600 = 11100$$

$$200x + 8100 = 11100$$

$$200x = 3000 \quad / : 200$$

$$x = 15 \rightarrow 75 - x = 60$$

.

$$60 - 15 = 45 :$$

,

, 20% - .

$$\frac{100 + 20}{100} \cdot 300 = 1.2 \cdot 300 = 360$$

,

, 35% - .

$$\frac{100 + 35}{100} \cdot 100 = 1.35 \cdot 100 = 135$$

$$360 \cdot 15 + 135 \cdot 60 = 13,500 :$$

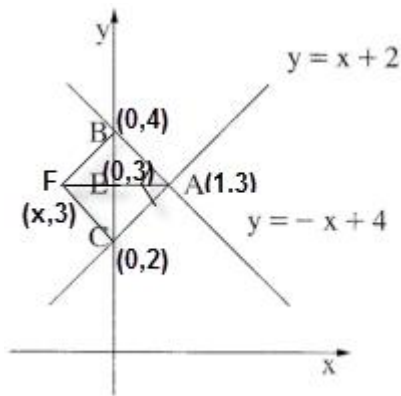
$$13500 - 11100 = 2,400$$

$$\frac{2400}{11100} \cdot 100 = 21.62\%$$

. 21.62% :

"

.B(0,4) y - , (m = -1) y = -x + 4 .
 .C(0,2) y - , (m = +1) y = x + 2



$$\begin{cases} y = -x + 4 \\ y = x + 2 \end{cases}$$

$$x + 2 = -x + 4$$

$$2x = 2$$

$$x = 1 \rightarrow y = 1 + 2 = 3 \rightarrow \boxed{A(1,3)}$$

.C(0,2) , B(0,4) , A(1,3) :

. ABC (1) .

$$\left. \begin{aligned} d_{AB} &= \sqrt{(1-0)^2 + (3-4)^2} = \sqrt{2} \\ d_{AC} &= \sqrt{(1-0)^2 + (3-2)^2} = \sqrt{2} \end{aligned} \right\} AB = AC$$

. (m_{AC} · m_{AB} = 1 · (-1) = -1) ABC AB AC (2)

$$.x_E = \frac{x_B + x_C}{2} = \frac{0+0}{2} = \frac{0}{2} = 0, \quad y_E = \frac{y_B + y_C}{2} = \frac{4+2}{2} = \frac{6}{2} = 3 .$$

. y = 3 AE y_E = y_A = 3 -

. y = 3 AE :

. F(x,3) A(1,3) , E(0,3) .

, 1 - x - , E(0,3) - A(1,3) -

. F(-1,3) , F(x,3)

:

$$0 = \frac{x_F + 1}{2} \quad / \cdot 2$$

$$0 = x_F + 1$$

$$x_F = -1$$

. F(-1,3) :

• R $M(8, 4)$, $(x-8)^2 + (y-4)^2 = R^2$.

• $A(3, -6)$

$R = \sqrt{(8-3)^2 + (4-(-6))^2}$

$R = \sqrt{125}$

• $(x-8)^2 + (y-4)^2 = 125$:

• AB $O(0, 0)$ **(1)** .

, 6 - y - , 3 - x - , $O(0, 0)$ - $A(3, -6)$ -

• $B(-3, 6)$, B

:

$0 = \frac{y_B - 6}{2} \quad / \cdot 2 \quad 0 = \frac{x_B + 3}{2} \quad / \cdot 2$

$0 = y_B - 6 \quad 0 = x_B + 3$

$y_B = 6 \quad x_B = -3$

• $B(-3, 6)$:

• $B(-3, 6)$ **(2)**

$(-3-8)^2 + (6-4)^2 = 125$

$125 = 125$

• $B(-3, 6)$

• :

• $A(3, -6)$

• $m_{MA} = \frac{4-(-6)}{8-3} = \frac{10}{5} = 2$ MA

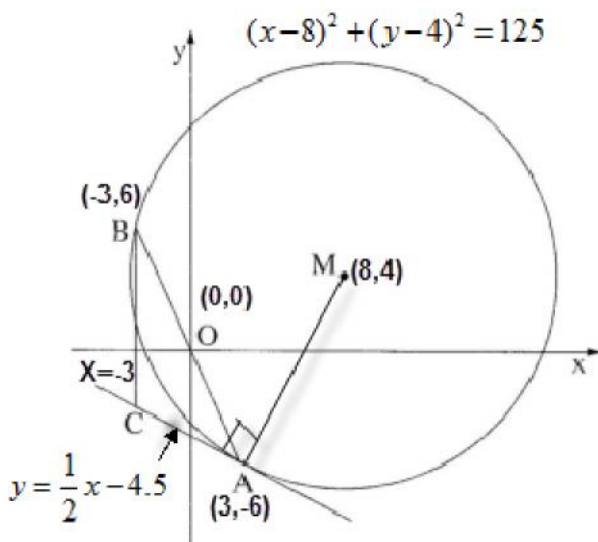
• $m_{\text{mashik}} \cdot 2 = -1 \rightarrow m_{\text{mashik}} = -\frac{1}{2}$, $-\frac{1}{2}$

$y - (-6) = -\frac{1}{2}(x - 3)$

$y + 6 = -\frac{1}{2}x + 1.5$

$y = -\frac{1}{2}x - 4.5$

• $y = -\frac{1}{2}x - 4.5$:



"

$$. y = -\frac{1}{2}x - 4.5 \quad C \quad .$$

$$. x_C = x_B = -3 \quad y \quad BC \quad , -3 \quad C \quad x \quad -$$

$$. y = -\frac{1}{2} \cdot (-3) - 4.5 = -3 \quad x = -3$$

$$. C(-3, -3) :$$

$$f(x) = \frac{x}{6} + \frac{6}{x} + 1$$

$$x = 0 \quad x \neq 0$$

$$x \neq 0$$

$$f'(x) = \frac{1}{6} - \frac{6}{x^2}$$

$$0 = \frac{1}{6} - \frac{6}{x^2} \quad | \cdot 6x^2$$

$$0 = -x^2 + 36$$

$$36 = x^2$$

$$x = 6 \rightarrow y = \frac{6}{6} + \frac{6}{6} + 1 = 3 \rightarrow (6, 3)$$

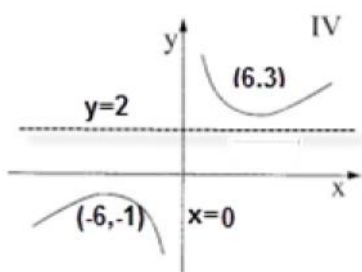
$$x = -6 \rightarrow y = \frac{-6}{6} + \frac{6}{-6} + 1 = -1 \rightarrow (-6, -1)$$

$$\left. \begin{matrix} y'(5) = \frac{1}{6} - \frac{6}{5^2} < 0 \\ y'(7) = \frac{1}{6} - \frac{6}{7^2} > 0 \end{matrix} \right\} (6, 3) \text{Min}$$

$$\left. \begin{matrix} y'(-7) = \frac{1}{6} - \frac{6}{(-7)^2} > 0 \\ y'(-5) = \frac{1}{6} - \frac{6}{(-5)^2} < 0 \end{matrix} \right\} (-6, -1) \text{Max}$$

$(-6, -1), (6, 3)$

-7	-6	-5	0	5	6	7	x
+	0	-		-	0	+	y'
↗	Max	↘		↘	Min	↗	



$-6 < x < 0$ $0 < x < 6$: , $x < -6$ $x > 6$: :

IV

$(6, 3)$

$(-6, -1)$

$x = 0$

IV :

$(-6, -1) -1 < y < 3$

$y = 2$

$y = 2$:

$$f(x) = x^3 - 6x^2 + 9x$$

, B - A

$$f'(x) = 3x^2 - 12x + 9$$

$$3x^2 - 12x + 9 = 0$$

$$x_{1,2} = \frac{-(-12) \pm \sqrt{(-12)^2 - 4 \cdot 3 \cdot 9}}{2 \cdot 3}$$

$$x_{1,2} = \frac{12 \pm 6}{6}$$

$$x_1 = \frac{12+6}{6} = \frac{18}{6} = 3 \rightarrow y = 3^3 - 6 \cdot 3^2 + 9 \cdot 3 = 0 \rightarrow \boxed{B(3, 0)}$$

$$x_2 = \frac{12-6}{6} = \frac{6}{6} = 1 \rightarrow y = 1^3 - 6 \cdot 1^2 + 9 \cdot 1 = 4 \rightarrow \boxed{A(1, 4)}$$

, B(3, 0), A(1, 4) :

$$y = 4x \quad (0, 0)$$

$$A(1, 4)$$

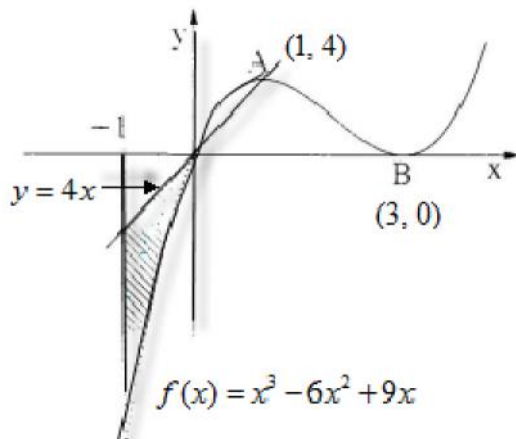
(1)

$$y = 4x \quad A(1, 4) \quad , y = 4 \cdot 1 = 4 \quad x = 1 \quad : A(1, 4)$$

$$y = 4x \quad (0, 0) \quad , y = 4 \cdot 0 = 0 \quad x = 0 \quad : (0, 0)$$

$$y = 4x \quad :$$

(2)



$$4x - (x^3 - 6x^2 + 9x) = 4x - x^3 + 6x^2 - 9x = -x^3 + 6x^2 - 5x$$

$$S = \int_{-1}^0 (-x^3 + 6x^2 - 5x) dx$$

$$S = \left[-\frac{x^4}{4} + \frac{6 \cdot x^3}{3} - \frac{5 \cdot x^2}{2} \right]_{-1}^0$$

$$S = \left(-\frac{0^4}{4} + \frac{6 \cdot 0^3}{3} - \frac{5 \cdot 0^2}{2} \right) - \left(-\frac{(-1)^4}{4} + \frac{6 \cdot (-1)^3}{3} - \frac{5 \cdot (-1)^2}{2} \right)$$

$$S = 0 - (-4.75)$$

$$\boxed{S = 4.75}$$

" 4.75 :

• $f(x) = -x^2 + 2x + 3$

, C - B

• $f(0) = -0^2 + 2 \cdot 0 + 3 = 3 \rightarrow \boxed{B(0,3)}$: $x = 0$, y -

: $y = 0$, x -

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

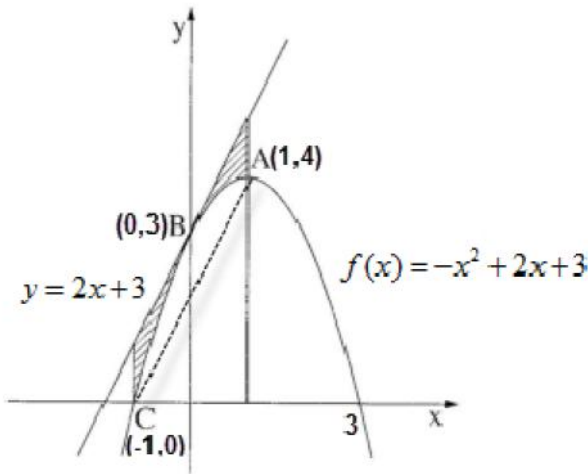
$$x_{1,2} = \frac{-2 \pm \sqrt{2^2 - 4 \cdot (-1) \cdot 3}}{2 \cdot (-1)}$$

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

$$x_1 = \frac{-2+4}{-2} = \frac{2}{-2} = -1 \rightarrow \boxed{C(-1,0)}$$

$$x_2 = \frac{-2-4}{-2} = \frac{-6}{-2} = 3$$

• C(-1, 0) , B(0,3) :



• B(0,3) -

(1) .

• $f'(x) = -2x + 2$

• $m = -2 \cdot 0 + 2 = 2$

$y - 3 = 2(x - 0)$

$y = 2x + 3$

• $y = 2x + 3$

:

• AC

(2)

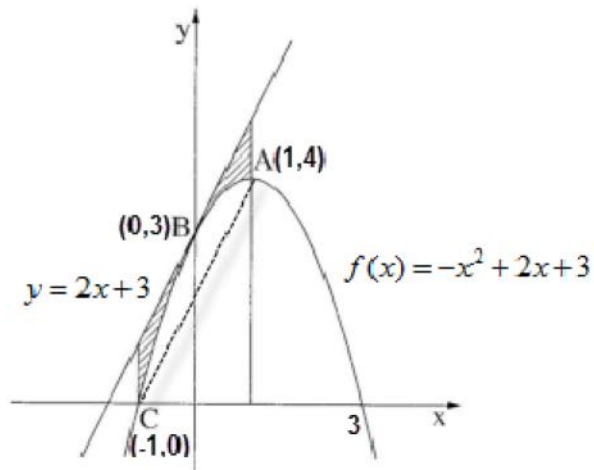
$$m_{AC} = \frac{4-0}{1-(-1)} = \frac{4}{2} = 2$$

AC

• :

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

$$y = 2x + 3$$



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

$$S = \int_{-1}^1 (x^2) dx$$

$$S = \frac{x^3}{3} \Big|_{-1}^1$$

$$S = \left(\frac{1^3}{3}\right) - \left(\frac{(-1)^3}{3}\right)$$

$$S = \frac{1}{3} - \left(-\frac{1}{3}\right)$$

$$\boxed{S = \frac{2}{3}}$$

$$= \frac{2}{3}$$

:

.EB = DG = " 10 - x , AB = DC = " 10 .

.HD = BF = " 6 - x , AD = BC = " 6

:

$$S = \frac{x \cdot x}{2} + \frac{(10-x)(6-x)}{2} + \frac{x \cdot x}{2} + \frac{(10-x)(6-x)}{2}$$

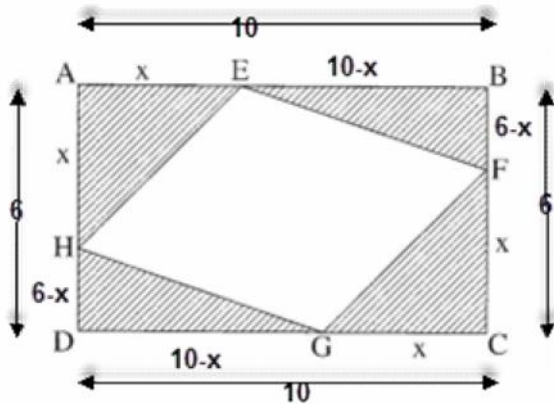
$$S = \frac{x \cdot x + (10-x)(6-x) + x \cdot x + (10-x)(6-x)}{2}$$

$$S = \frac{x^2 + 60 - 10x - 6x + x^2 + x^2 + 60 - 10x - 6x + x^2}{2}$$

$$S = \frac{4x^2 - 32x + 120}{2}$$

$$S = 2x^2 - 16x + 60$$

.2x² - 16x + 60 :



پلن'ج'ن

$$S = 2x^2 - 16x + 60 :$$

:

$$s' = 4x - 16$$

$$0 = 4x - 16$$

$$-4x = -16 \quad /: (-4)$$

$$x = 4$$

S'(3) = 4·3 - 16 < 0, S'(5) = 4·5 - 16 > 0

0	3	4	5	10	x
	-	0	+		S'
	↘	Min	↗		

, x = 4 :

.10 · 6 = " 60 ABCD

. S(4) = 2·4² - 16·4 + 60 = " 28 , x = 4

.60 - 28 = " 32 EFGH

.() " 32 EFGH :

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