

’ ’ (") x - .

$$\frac{100+P}{100} \cdot x, \quad P = x$$

P = 25 : , 25% -

$$\frac{100+25}{100} \cdot x = 1.25x :$$

(t) (v) (s) - s = vt

" s	" v	t	
x	20	$\frac{x}{20}$	' ,
1.25x	15	$\frac{1.25x}{15}$	' ,

2 - :

$$\frac{x}{20} + 2 = \frac{1.25x}{15} :$$

:

$$\frac{3x}{20} + 2 = \frac{5x}{12} \quad / \cdot 60$$

$$3x + 120 = 5x$$

$$-2x = -120 \quad / : (-2)$$

$$\boxed{x = 60}$$

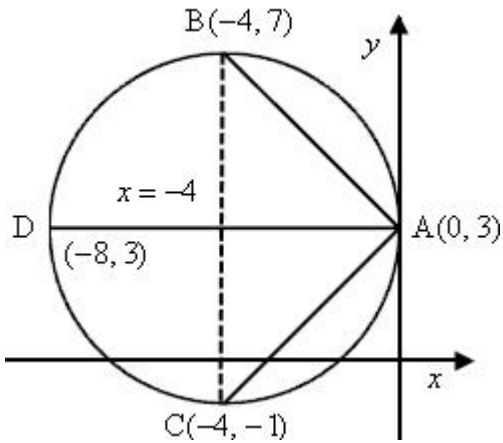
. " 60 ' , :

$$1.25 \cdot 60 = 75 .$$

. " 75 ' , :

"

$$\cdot (x-a)^2 + (y-3)^2 = (a+8)^2 \tag{1}$$



:

A(0, 3)

$$(0-a)^2 + (3-3)^2 = (a+8)^2$$

$$a^2 = (a+8)(a+8)$$

$$a^2 = a^2 + 8a + 8a + 64$$

$$-16a = 64 \quad /: (-16)$$

$$\boxed{a = -4}$$

$$\cdot a = -4 :$$

$$(x - (-4))^2 + (y - 3)^2 = (-4 + 8)^2$$

$$a = -4 \tag{2}$$

$$((-4, 3) \quad) (x+4)^2 + (y-3)^2 = 16$$

:

. D - C , B

A(0, 3) , $m_{AC} = 1$: AC

$$y - 3 = 1(x - 0) \rightarrow y = x + 3$$

$$(x+4)^2 + (x+3-3)^2 = 16$$

$$(x+4)^2 + (x)^2 = 16$$

$$(x+4)(x+4) + x^2 = 16$$

$$x^2 + 4x + 4x + 16 + x^2 = 16$$

$$2x^2 + 8x = 0$$

$$2x(x+4) = 0$$

$$2x = 0 \quad x+4 = 0$$

$$x = 0 \quad x = -4 \rightarrow y = -4 + 3 = -1$$

$$\boxed{C(-4, -1)}$$

A(0, 3) , $m_{AB} = -1$: AB

$$y - 3 = -1(x - 0) \rightarrow y = -x + 3$$

$$(x+4)^2 + (-x+3-3)^2 = 16$$

$$(x+4)^2 + (-x)^2 = 16$$

$$(x+4)(x+4) + x^2 = 16$$

$$x^2 + 4x + 4x + 16 + x^2 = 16$$

$$2x^2 + 8x = 0$$

$$2x(x+4) = 0$$

$$2x = 0 \quad x+4 = 0$$

$$x = 0 \quad x = -4 \rightarrow y = -(-4) + 3 = 7$$

$$\boxed{B(-4, 7)}$$

$$y_D = y_A = 3 \quad x -$$

, 0 AD

$$(x+4)^2 + (3-3)^2 = 16 \rightarrow (x+4)^2 = 16$$

$$(x+4)(x+4) = 16 \rightarrow x^2 + 4x + 4x + 16 = 16$$

$$x^2 + 8x = 0 \rightarrow x(x+8) = 0$$

$$2x = 0 \quad x+8 = 0$$

$$x = 0 \quad x = -8 \rightarrow \boxed{D(-8, 3)}$$

D(-8, 3) , C(-4, -1) , B(-4, 7) :

$$, -4 - \quad C(-4, -1) - B(-4, 7) \quad x -$$

$$\cdot x = -4 \quad BC$$

$(-4, 3)$

BC :

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

$$(\quad) x \neq 0$$

$$(\quad) x = 0 \quad x -$$

$$y' = 0$$

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

$$0 = -\frac{1}{4} + \frac{4}{x^2} \quad / \cdot 4x^2$$

$$0 = -x^2 + 16 \rightarrow x^2 = 16 \rightarrow x = \pm 4$$

$$x = 4 \rightarrow y = -\frac{4}{4} - \frac{4}{4} = -2 \rightarrow (4, -2)$$

$$x = -4 \rightarrow y = -\frac{-4}{4} - \frac{4}{-4} = 2 \rightarrow (-4, 2)$$

$$f'(-5) = -\frac{1}{4} + \frac{4}{(-5)^2} = -0.09 < 0, \quad f'(-3) = -\frac{1}{4} + \frac{4}{(-3)^2} = 0.19 < 0$$

$$f'(3) = -\frac{1}{4} + \frac{4}{3} = 0.19 > 0, \quad f'(5) = -\frac{1}{4} + \frac{4}{5^2} = -0.09 < 0$$

-5	-4	-3	0	3	4	5	x
-	0	+		+	0	-	y'
↘	Min	↗		↘	Max	↗	

(4, -2), (-4, 2) :

$$y = 0 \quad x -$$

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

$$0 = -x^2 - 16$$

x - :

$$g(x) = \frac{x}{4} - \frac{4}{x}$$

$$g'(x) = \frac{1}{4} + \frac{4}{x^2}$$

_____ x < 0 x > 0

"

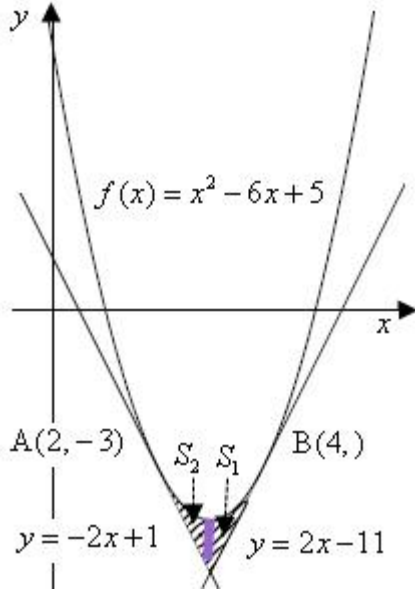
:

.

$$0 = \frac{1}{4} + \frac{4}{x^2} \rightarrow 0 = x^2 + 16 \rightarrow x^2 = -16$$

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$$\cdot -2 \quad y = -2x + 1 \quad (1)$$

$$\cdot 2 \quad y = 2x - 11$$

) (2)

$$f(x) = x^2 - 6x + a$$

$$f'(x) = 2x - 6$$

$$-2 = 2x - 6$$

$$2 = 2x - 6$$

$$-2x = -4 \quad /: (-2)$$

$$-2x = -8 \quad /: (-2)$$

$$\boxed{x_A = 2}$$

$$\boxed{x_B = 4}$$

$$\cdot x_B = 4, x_A = 2 :$$

$$\cdot y = -2x + 1$$

$$x_A = 2 \quad (1)$$

$$y = -2 \cdot 2 + 1 = -3$$

$$y_A = -3 :$$

$$A(2, -3)$$

) (2)

$$-3 = 2^2 - 6 \cdot 2 + a \rightarrow -3 = -8 + a \rightarrow \boxed{a = 5}$$

$$\cdot a = 5 :$$

$$\boxed{f(x) = x^2 - 6x + 5}$$

$$S_1 = \int_3^4 (x^2 - 6x + 5 - (2x - 11)) dx$$

$$S_1 = \int_3^4 (x^2 - 6x + 5 - 2x + 11) dx$$

$$S_1 = \int_3^4 (x^2 - 8x + 16) dx$$

$$S_1 = \left[\frac{x^3}{3} - \frac{8x^2}{2} + 16x \right]_3^4$$

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

$$S_1 = 21 \frac{1}{3} - 21$$

$$\boxed{S_1 = \frac{1}{3}}$$

"

$$S_2 = \int_2^3 (x^2 - 6x + 5 - (-2x + 1)) dx$$

$$S_2 = \int_2^3 (x^2 - 6x + 5 + 2x - 1) dx$$

$$S_2 = \int_2^3 (x^2 - 4x + 4) dx$$

$$S_2 = \left[\frac{x^3}{3} - \frac{4x^2}{2} + 4x \right]_2^3$$

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

$$S_2 = 3 - 2 \frac{2}{3}$$

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

$$\frac{1}{3} + \frac{1}{3} = \frac{2}{3} :$$

$$\cdot \quad \frac{2}{3} \quad :$$

$$f(x) = \frac{x-2}{4} .$$

$$. I \quad f(x) = \frac{1}{4}x - \frac{2}{4}$$

$$, x=0 \quad g(x) = -\frac{4}{x}$$

. y - II

$$g(x) = -\frac{4}{x} - II , f(x) = \frac{x-2}{4} - I :$$

. AB **אינ'אום אורק הקטע** .

. x - B - A

(y - AB) x -

$$B(x, -\frac{4}{x}) - A(x, \frac{1}{4}x - \frac{2}{4}) :$$

$$AB = \frac{1}{4}x - \frac{2}{4} - (-\frac{4}{x})$$

$$\boxed{AB = \frac{1}{4}x - \frac{2}{4} + \frac{4}{x}}$$

$$\boxed{(AB)' = \frac{1}{4} - \frac{4}{x^2}}$$

$$0 = \frac{1}{4} - \frac{4}{x^2} \quad / \cdot 4x^2$$

$$0 = x^2 - 16$$

$$16 = x^2$$

$$\boxed{x=4} \quad \leftarrow x > 0$$

$$x_A, x_B > 0 \rightarrow x_A = x_B = 4$$

$$(AB)'(3) = \frac{1}{4} - \frac{4}{3^2} = -0.19 < 0, \quad (AB)'(5) = \frac{1}{4} - \frac{4}{5^2} = 0.09 > 0$$

3	4	5	x
-	0	+	y'
↘	Min	↗	

. $x_A = x_B = 4 :$

$$f(x) = x + \frac{a}{x} - 8$$

(,) $x \neq 0$:

$$f'(4) = 0, x = 4, 0, x -$$

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

$$0 = 1 - \frac{a}{4^2} + \frac{1}{a} \leftarrow f'(4) = 0$$

$$0 = 1 - \frac{a}{16} \rightarrow 0 = 16 - a$$

$$\boxed{a = 16}$$

$a = 16$:

$$\boxed{f(x) = x + \frac{16}{x} - 8}$$

$a = 16$

:

$$\boxed{f'(x) = 1 - \frac{16}{x^2}}$$

$$0 = 1 - \frac{16}{x^2} \rightarrow x^2 - 16 = 0$$

$$x^2 = 16 \rightarrow x = \pm 4$$

$$x = 4 \rightarrow f(4) = 4 + \frac{16}{4} - 8 \rightarrow \boxed{(4, 0)}$$

$$x = -4 \rightarrow f(-4) = -4 + \frac{16}{-4} - 8 \rightarrow \boxed{(-4, -16)}$$

$$f'(3) = 1 - \frac{16}{3^2} = -0.78 < 0, \quad f'(5) = 1 - \frac{16}{5^2} = 0.36 > 0$$

$$f'(-5) = 1 - \frac{16}{(-5)^2} = 0.36 > 0, \quad f'(-3) = 1 - \frac{16}{(-3)^2} = -0.78 < 0$$

-5	-4	-3	0	3	4	5	x
+	0	+		-	0	+	y'
↖	Max	↖		↘	Min	↘	

$(-4, -16)$, $(4, 0)$

· $x > 5$ $(8, 2)$ ·

· $(8, 2)$