

$$\frac{100+80}{100} \cdot x = 1.8x$$

$$252$$

$$x + 1.8x = 252$$

$$x + 1.8x = 252$$

$$2.8x = 252 \quad /: 2.8$$

$$\boxed{x = 90}$$

$$90 - 54 = 36$$

$$0.4 \cdot 100 = 40\%$$

$$\frac{36}{90} = 0.4$$

$$40\%$$

• $y = 0$ C x - , $y = -3x + 9$, AC .

$$0 = -3x + 9 \quad / +3x$$

$$3x = 9 \quad / :3$$

$$x = 3 \rightarrow \boxed{C(3,0)}$$

• $x = 0$ A y - , $y = -3x + 9$, AC

$$y = -3 \cdot 0 + 9 = 9 \rightarrow \boxed{A(0,9)}$$

• A(0,9) , C(3,0) :

• $y = 9$ AB $y_B = y_A = 9$, x - , OC AB .

• $y = 9$ AB :

• $x_B = x_C = 3$, y - , OA BC (1) .

• B(3,9)

• OB (2)

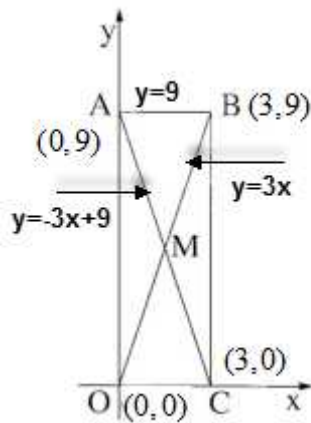
• m_{OB} O(0,0)

$$m_{OB} = \frac{9-0}{3-0} = 3$$

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

$$\boxed{y = 3x}$$

• $y = 3x$ OB :



$$• S_{ACBO} = OA \cdot OC = 9 \cdot 3 = 27 :$$

$$• S_{\Delta AMB} = \frac{27}{4} = 6.75 :$$

• " 6.75 AMB :

• $x =$ $M(4,5)$ •

• x AM , $x =$,

• $x_A = x_M = 4$

• $x_A = 4 :$

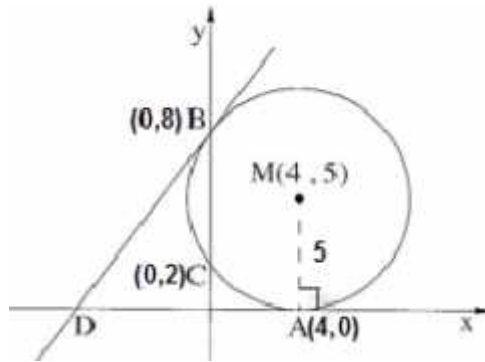
$R = y_M - y_A = 5 - 0 = 5$, x AM - **(1)** .

• 5 :

• $(x-4)^2 + (y-5)^2 = 25$ **(2)**

$x = 0$, $C - B$ $y =$ **(1)** .

• $x = 0$



$(0-4)^2 + (y-5)^2 = 25$

$16 + (y-5)(y-5) = 25$

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

$y^2 - 10y + 16 = 0$

$y_{1,2} = \frac{-(-10) \pm \sqrt{(-10)^2 - 4 \cdot 1 \cdot 16}}{2 \cdot 1}$

$y_{1,2} = \frac{10 \pm 6}{2}$

$y_1 = \frac{10+6}{2} = \frac{16}{2} = 8 \rightarrow \boxed{B(0, 8)}$

$y_2 = \frac{10-6}{2} = \frac{4}{2} = 2 \rightarrow \boxed{C(0, 2)}$

• $C(0, 2)$, $B(0, 8)$:

D(0,8) (2)

$$m_{BM} = \frac{8-5}{0-4} = \frac{3}{-4} = -\frac{3}{4}$$

() $m_{BD} = +\frac{4}{3} = 1\frac{1}{3}$ $m_{BD} \cdot (-\frac{3}{4}) = -1$

$m_{BD} = 1\frac{1}{3}$ B(0,8) ,BD

$$y-8 = 1\frac{1}{3}(x-0)$$

$$\boxed{y = 1\frac{1}{3}x + 8}$$

$y = 1\frac{1}{3}x + 8$

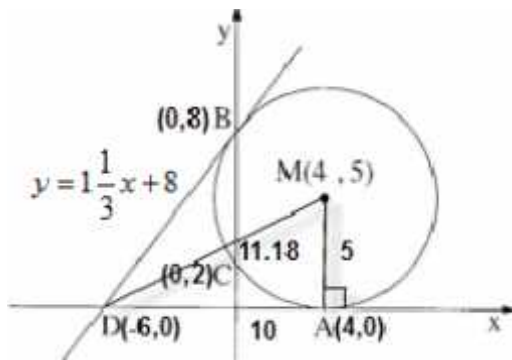
D $x - y = 1\frac{1}{3}x + 8$

$y = 0$

$$0 = 1\frac{1}{3}x + 8 \quad / -1\frac{1}{3}x$$

$$-1\frac{1}{3}x = 8 \quad / :(-1\frac{1}{3})$$

$$x = -6 \rightarrow \boxed{D(-6,0)}$$



.DAM

$$DM = \sqrt{(4 - (-6))^2 + (5 - 0)^2} = \sqrt{125} = 11.18$$

$$MA = R = 5$$

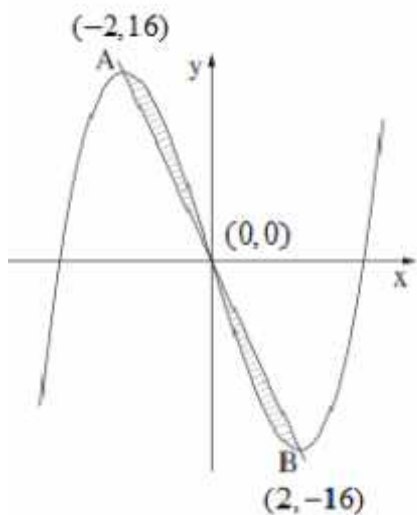
$$DA = x_A - x_D = 4 - (-6) = 10$$

$$.11.18 + 5 + 10 = 26.18 :$$

26.18 DAM :

35803

15



$$f(x) = x^3 - 12x$$

$$B - A$$

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

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

$$-3x^2 = -12 \quad /: (-3)$$

$$x^2 = 4$$

$$x = 2 \rightarrow f(2) = 2^3 - 12 \cdot 2 = -16 \rightarrow B(2, -16)$$

$$x = -2 \rightarrow f(-2) = (-2)^3 - 12 \cdot (-2) = 16 \rightarrow A(-2, 16)$$

$$B(2, -16), A(-2, 16):$$

$$AB$$

$$m_{AB} = \frac{16 - (-16)}{-2 - 2} = \frac{32}{-4} = -8$$

$$m_{AB} = -8 \quad A(-2, 16)$$

$$AB$$

$$y - 16 = -8(x - (-2))$$

$$y - 16 = -8x - 16$$

$$y = -8x$$

$$y = -8x \quad (0, 0)$$

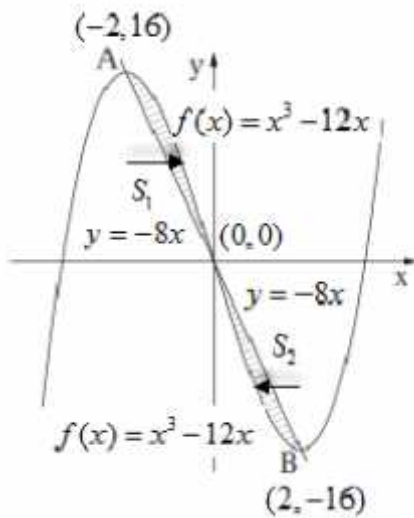
$$0 = -8 \cdot 0$$

$$0 = 0 \text{ o.k.}$$

$$y = -8x \quad (0, 0)$$

:

S_1	S_2	
$f(x) = x^3 - 12x$	$y = -8x$	
$y = -8x$	$f(x) = x^3 - 12x$	
$x = 0$	$x = 2$	x
$x = -2$	$x = 0$	x



$$S_1 = \int_{-2}^0 (x^3 - 12x - (-8x)) dx$$

$$S_1 = \int_{-2}^0 (x^3 - 12x + 8x) dx$$

$$S_1 = \int_{-2}^0 (x^3 - 4x) dx$$

$$S_1 = \left[\frac{x^4}{4} - \frac{4x^2}{2} \right]_{-2}^0$$

$$S_1 = \left(\frac{0^4}{4} - \frac{4 \cdot 0^2}{2} \right) - \left(\frac{(-2)^4}{4} - \frac{4 \cdot (-2)^2}{2} \right)$$

$$S_1 = 0 - (-4) \rightarrow \boxed{S_1 = 4}$$

$$S_2 = \int_0^2 (-8x - (x^3 - 12x)) dx$$

$$S_2 = \int_0^2 (-8x - x^3 + 12x) dx$$

$$S_2 = \int_0^2 (4x - x^3) dx$$

$$S_2 = \left[\frac{4x^2}{2} - \frac{x^4}{4} \right]_0^2$$

$$S_2 = \left(\frac{4 \cdot 2^2}{2} - \frac{2^4}{4} \right) - \left(\frac{4 \cdot 0^2}{2} - \frac{0^4}{4} \right)$$

$$S_2 = 4 - (0) \rightarrow \boxed{S_2 = 4}$$

$$S = S_1 + S_2 = 4 + 4 = 8 :$$

.8 :

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

$$.x \neq 0 \tag{1}$$

$$x = 0, \quad x = 0 \tag{2}$$

$$.x = 0 :$$

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

$$\boxed{f'(x) = \frac{-x^2 + 16}{4x^2}}$$

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

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

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

$$x = 4 \rightarrow y = \frac{1}{2} - \frac{4}{4} - \frac{4}{4} \rightarrow y = -1\frac{1}{2} \rightarrow \boxed{(4, -1\frac{1}{2})}$$

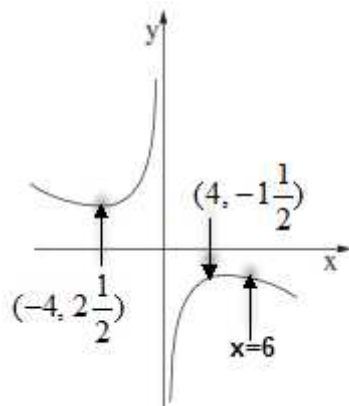
$$x = -4 \rightarrow y = \frac{1}{2} - \frac{-4}{4} - \frac{4}{-4} \rightarrow y = 2\frac{1}{2} \rightarrow \boxed{(-4, 2\frac{1}{2})}$$

$$. \quad (-4, 2\frac{1}{2}), \quad (4, -1\frac{1}{2}) :$$

$$x = 6$$

$$f'(-6) = \frac{-(-6)^2 + 16}{4(-6)^2} = \frac{-20}{144} = -\frac{5}{36} < 0 ,$$

$$.x = 6 \quad f'(x) \quad , \quad :$$



, A(x, -x² + 3x) y = -x² + 3x A

. AB = y_A - y_B = -x² + 3x - 0 = -x² + 3x x_B = x_A = x , x - AB

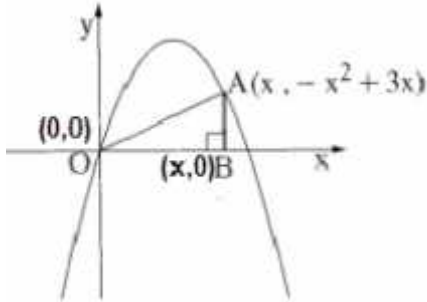
. OB = x_B - x_O = x - 0 = x , x - OB

. AB = -x² + 3x , OB = x :

. ABO

ΠΙΝ'ΟΡΗ

(1)



$$S = \frac{OB \cdot AB}{2}$$

$$S = \frac{x \cdot (-x^2 + 3x)}{2}$$

$$S = \frac{-x^3 + 3x^2}{2}$$

$$S = -\frac{1}{2}x^3 + \frac{3}{2}x^2$$

:

$$S' = -\frac{3}{2}x^2 + 3x$$

$$0 = -\frac{3}{2}x^2 + 3x \quad / \cdot 2$$

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

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

$$\boxed{x=0} \quad \boxed{x=2}$$

. x > 0 , A x = 0

:

$$S'(1) = -\frac{3}{2} \cdot 1^2 + 3 \cdot 1 = 1.5 > 0, \quad S'(3) = -\frac{3}{2} \cdot 2.5^2 + 3 \cdot 2.5 = -1.875 < 0$$

0	1	2	2.5	x
	+	0	-	S'(x)
	↗	Max	↘	

. ABO x = 2 :

$$S(2) = -\frac{1}{2} \cdot 2^3 + \frac{3}{2} \cdot 2^2 = 2 : x = 2 \quad (2)$$

. " 2 ABO :

"