

$B(1, 0), m_{BC} = 1 : BC$ (1)

$BC \equiv y - 0 = 1(x - 1)$

$BC \equiv y = x - 1$

:C

$$\begin{cases} x - 3y + 9 = 0 \\ y = x - 1 \end{cases}$$

$x - 3(x - 1) + 9 = 0$

$x - 3x + 3 + 9 = 0$

$-2x = -12$

$x = 6 \rightarrow y = 6 - 1 = 5 \rightarrow C(6, 5)$

C(6, 5) :

(2)

M

$M\left(\frac{6+1}{2}, \frac{5+0}{2}\right) \rightarrow M(3.5, 2.5)$

$m_{BC} = 1 \rightarrow m_{AM} = -1$

$AM \equiv y - 2.5 = -1(x - 3.5)$

$AM \equiv y - 2.5 = -x + 3.5$

$AM \equiv y = -x + 6$

:A

$$\begin{cases} x - 3y + 9 = 0 \\ y = -x + 6 \end{cases}$$

$x - 3(-x + 6) + 9 = 0$

$x + 3x - 18 + 9 = 0$

$4x = 9$

$x = 2.25 \rightarrow y = -2.25 + 6 = 3.75 \rightarrow A(2.25, 3.75)$

A(2.25, 3.75) :

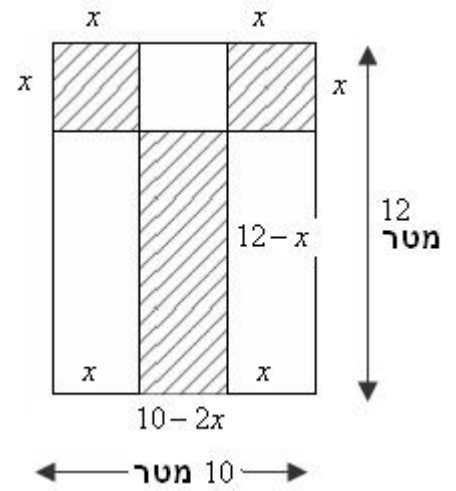
$0 - 3y + 9 = 0 \rightarrow -3y = -9 \rightarrow D(0, 3)$ D

: M(3.5, 2.5) BC

$R = \sqrt{(1 - 3.5)^2 + (0 - 2.5)^2} = \sqrt{12.5}$

$DM = \sqrt{(0 - 3.5)^2 + (3 - 2.5)^2} = \sqrt{12.5}$

D :



$$\begin{aligned}
 & , \quad 3240 \\
 & \cdot \quad 60 \quad " \\
 & 3240 : 60 = " \quad 54 :
 \end{aligned}$$

$$(\quad) x -$$

$$x \cdot x = x^2 :$$

$$2 \cdot x^2 = 2x^2 :$$

$$, \quad 20\% - \quad , \quad 10$$

$$\frac{100+20}{200} \cdot 10 = 1.2 \cdot 10 = 12$$

$$(\quad) 12 - x \quad 10 - 2x$$

$$(10 - 2x)(12 - x) = 120 - 10x - 24x + 2x^2 = 120 - 34x + 2x^2 :$$

$$\cdot " \quad 54$$

$$120 - 34x + 2x^2 + 2x^2 = 54$$

$$4x^2 - 34x + 66 = 0$$

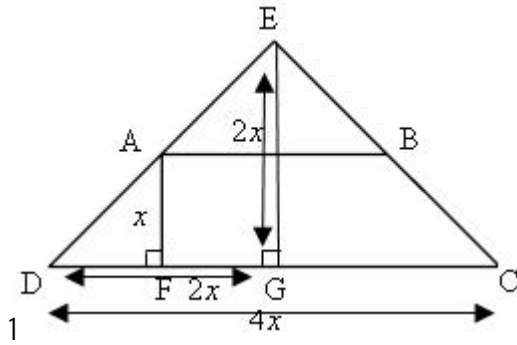
$$x_{1,2} = \frac{34 \pm 10}{8}$$

$$x_1 = \frac{34+10}{8} = \frac{44}{8} = \cancel{5.5} \leftarrow 2x > 10$$

$$x_2 = \frac{34-10}{8} = \frac{24}{8} = 3$$

$$2 \cdot 3^2 = " \quad 18 :$$

$$\cdot " \quad 18 \quad :$$



1 (AD = BC)

1 ABCD 1?B

1 DC = 4AF 1?E1 DA = AE 1?D111 AF ⊥ DC 1?C

1 AE = " 15 1?F1111:

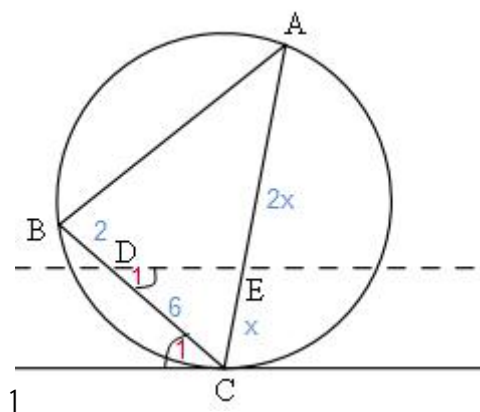
1 AB1 .

1 ΔDAF 11. 1K "

. ΔDEC

	1		
	AF = x	6	
	DC = 4AF	7	4
	DC = 4x	8	7,6
	AD = BC	9	1
"	∠D = ∠C	10	9
ΔDEC	ΔDEC	11	10
	EG ⊥ DC	12	
"	DG = CG	13	12,11
	DG = 2x	14	13,8
	AF ⊥ DC	15	2
	AF EG	16	15,12
	DA = AE	17	3
	DEG	18	17,16
	DF = x	19	18,14
	DF = AF	20	19,6
. . .			
	AE = " 5	21	5
	AD = " 5	22	21,17
180° ΔAFD "	∠D = 45°	23	20,15
	$\sin 45^\circ = \frac{x}{5} \rightarrow x = 3.536$	24	23,22,15
	AB DC	25	9
	DEC	26	25,17
.	AB = 2x = " 7.071	27	26,24,8
. . .			

180° ΔDEC -	$\angle E = 90^\circ$	28	23,10
	DC	29	28,13
. . .			



1

1C1

.1

1

11DE 1?C

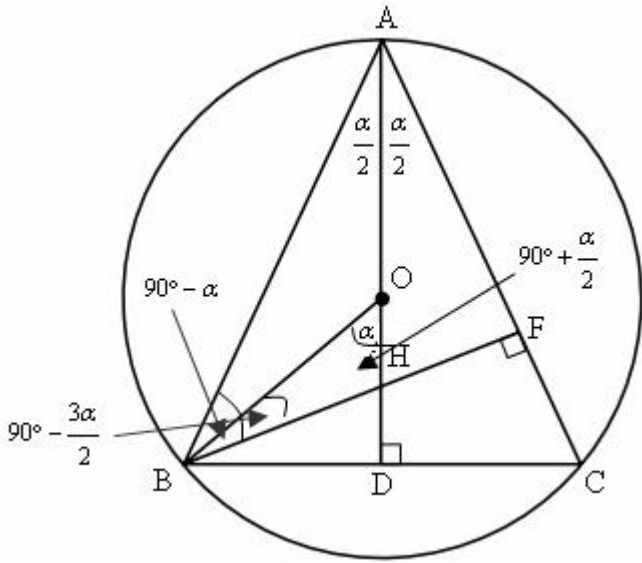
BD = " 2 .3

DC = " 6 .4

AE = 2EC .5

$$\frac{S_{\Delta ABC}}{S_{\Delta DEC}} \cdot \Delta DEC \sim \Delta ABC \quad \therefore "$$

	C	6	1
	DE	7	2
	$\angle D_1 = \angle C_1$	8	7
	$\angle A = \angle C_1$	9	6
	() $\angle D_1 = \angle A$	10	9,8
	() $\angle DCE = \angle BCA$	11	
..	$\Delta DEC \sim \Delta ABC$	12	11,10
. . . .			
	DC = " 6	13	4
	BD = " 2	14	3
	BC = " 8	15	14,13
	AE = 2EC	16	5
	$\frac{AC}{EC} = 3$	17	16
	$\frac{S_{\Delta ABC}}{S_{\Delta DEC}} = \frac{0.5 BC \cdot AC \cdot \cancel{\sin \angle C}}{0.5 DC \cdot EC \cdot \cancel{\sin \angle C}}$ $\frac{S_{\Delta ABC}}{S_{\Delta DEC}} = \frac{8}{6} \cdot 3$ <div style="border: 1px solid black; padding: 5px; display: inline-block;"> $\frac{S_{\Delta ABC}}{S_{\Delta DEC}} = 4$ </div>	18	17,15,13
. . . .			



() $\angle BAC = r$.
 (. ") $\angle BAD = \angle CAD = 0.5r$
) $\angle BOH = r$
 ((AHF) $\angle BHO = 90^\circ + 0.5r$
 (180° ABF) $\angle ABH = 90^\circ - r$
 (180° $\triangle OBH$) $\angle OBH = 90^\circ - 1.5r$
 :
 $\angle ABH = 90^\circ - r$, $\angle BHA = 90^\circ + 0.5r$, $\angle BAH = 0.5r$

AH .

$\triangle ABC$

$$\frac{AB}{\sin \angle C} = 2R$$

$$\frac{AB}{\sin(90^\circ - 0.5r)} = 2R$$

$$\boxed{AB = 2R \cos 0.5r}$$

$\triangle ABH$

$$\frac{AH}{\sin \angle ABH} = \frac{AB}{\sin \angle AHB}$$

$$\frac{AH}{\sin(90^\circ - r)} = \frac{2R \cos 0.5r}{\sin(90^\circ + 0.5r)}$$

$$AH = \frac{2R \cos 0.5r \cos r}{\cos 0.5r}$$

$$\boxed{AH = 2R \cos r}$$

$$AH = 2R \cos r :$$

OBH .

$\triangle OBH$

$$S_{\triangle OBH} = \frac{(OB)^2 \sin \angle OBH \sin \angle BOH}{2 \sin \angle BHO}$$

$$S_{\triangle OBH} = \frac{R^2 \sin(90^\circ - 1.5r) \sin r}{2 \sin(90^\circ + 0.5r)}$$

$$S_{\triangle OBH} = \frac{R^2 \cos 1.5r \cdot 2 \sin 0.5r \cos 0.5r}{2 \cos 0.5r}$$

$$\boxed{S_{\triangle OBH} = R^2 \cos 1.5r \sin 0.5r}$$

$$" R^2 \cos 1.5r \sin 0.5r :$$

$0 \leq x \leq f$

$f(x) = 4 \sin 2x - 4$

$f'(x) = 8 \cos 2x$

$0 = 8 \cos 2x$

$2x = \frac{f}{2} + f k$

$x = \frac{f}{4} + \frac{f}{2} k$

$x = \frac{f}{4} \quad k = 0$

$x = \frac{3f}{4} \quad k = 1$

$f(\frac{f}{4}) = 4 \sin 2 \cdot \frac{f}{4} - 4 = 0 \rightarrow (\frac{f}{4}, 0)$

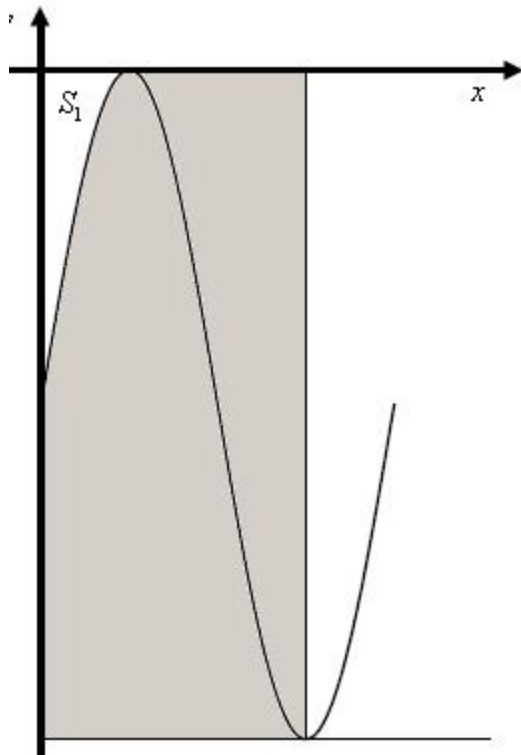
$f(\frac{3f}{4}) = 4 \sin(2 \cdot \frac{3f}{4}) - 4 = -8 \rightarrow (\frac{3f}{4}, -8)$

$y = -8$

$y = -8$

S_1

$8 \cdot \frac{3f}{4} = 6f$



S_1	
$y = 0$	
$f(x) = 4 \sin 2x - 4$	1
$x = \frac{f}{4}$	x
$x = 0$	x

$S_1 = \int_0^{\frac{f}{4}} (0 - (4 \sin 2x - 4)) dx = \int_0^{\frac{f}{4}} (-4 \sin 2x + 4) dx$

$S_1 = \frac{4 \cos 2x}{2} + 4x \Big|_0^{\frac{f}{4}}$

$S_1 = (2 \cos 2 \cdot \frac{f}{4} + 4 \cdot \frac{f}{4}) - (2 \cos 2 \cdot 0 + 4 \cdot 0)$

$S_1 = f - 2$

:

$6f - (f - 2) = 6f - f + 2 = 5f + 2$

" $5f + 2$

:

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

, (2)

(2)

:

$$y = -1 \quad \lim_{x \rightarrow \infty} f(x) = \frac{-x^2 - a}{x^2 - 2x + 1} = \frac{-1}{1} = -1$$

y = -1 :

$$P \quad x - a \quad (1) .$$

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

$$2x = 1 - a \rightarrow \boxed{x_p = \frac{1-a}{2}}$$

$$x_p = \frac{1-a}{2} :$$

$$3.5 \quad P \quad x - (2)$$

$$3.5 = \frac{1-a}{2} \rightarrow 7 = 1-a \rightarrow \boxed{a = -6}$$

a = -6 :

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

$$a = -6 \quad (1) .$$

$$x-1 \neq 0 \rightarrow \boxed{x \neq 1} :$$

x ≠ 1 :

$$-x^2 + 6 = 0 \rightarrow x^2 = 6 \rightarrow \boxed{(\sqrt{6}, 0)}, \boxed{(-\sqrt{6}, 0)} : \quad y = 0 \quad x \quad (2)$$

$$f(0) = \frac{-0^2 + 6}{(0-1)^2} = 6 \rightarrow \boxed{(0, 6)} : \quad x = 0 \quad y$$

(0, 6) , (-√6, 0) , (√6, 0) :

: **(3)**

$$f'(x) = \frac{-2x(x-1)^2 - 2(x-1)(-x^2 + 6)}{(x-1)^4}$$

$$f'(x) = \frac{2(x-1)(-x(x-1) - (-x^2 + 6))}{(x-1)^4}$$

$$f'(x) = \frac{2(x-1)(-x^2 + x + x^2 - 6)}{(x-1)^4}$$

$$\boxed{f'(x) = \frac{2(x-1)(x-6)}{(x-1)^4}}$$

$$x = 6$$

$$f(6) = \frac{-6^2 + 6}{(6-1)^2} = -1.2 \rightarrow \boxed{(6, -1.2)}$$

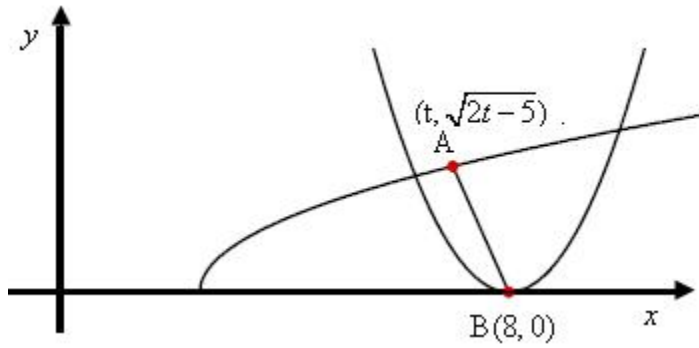
() (6, -1.2) :

$$f'(0) = 2(0-1)(0-6) > 0, \quad f'(5) = 2(5-1)(5-6) < 0, \quad f'(7) = 2(7-1)(7-6) > 0$$

0	1	5	6	7	x
+		-	0	+	$f'(x)$
↖		↘	Min	↖	

. (6, -1.2) :

$$x < 1$$



ח'י'ח'ס

אורך הקטע AB

$$y = x^2 - 16x + 64$$

B

$$, y = (x-8)^2$$

$$. B(8, 0)$$

$$. A(t, \sqrt{2t-5})$$

A

:

$$AB = \sqrt{(t-8)^2 + (\sqrt{2t-5} - 0)^2}$$

$$AB = \sqrt{t^2 - 16t + 64 + 2t - 5}$$

$$AB = \sqrt{t^2 - 14t + 59}$$

$$(AB)' = \frac{2t-14}{2\sqrt{t^2-14t+59}}$$

$$0 = 2t - 14$$

$$2t = 14$$

$$t = 7$$

$$f(7) = \sqrt{2 \cdot 7 - 5} = 3$$

$$B(7, 3)$$

$$(AB)'(6) = 2 \cdot 6 - 14 < 0 \rightarrow \searrow \quad (AB)'(8) = 2 \cdot 8 - 14 > 0 \rightarrow \nearrow$$

$$. \quad AB \quad t = 7$$

$$. (\quad) B \quad (7, 3) \quad :$$