

(1)

$$xy - \frac{xy}{3} = \frac{2xy}{3} \tag{2}$$

$$75 \cdot \frac{xy}{3} = 25xy \quad , \quad 75$$

$$60 \cdot \frac{2xy}{3} = 40xy \quad , \quad 60$$

$$25xy + 40xy = 1170 \quad , \quad 1,170 \quad x$$

$$65xy = 1170$$

$$xy = 18$$

$$x = y + 3$$

$$\begin{cases} xy = 18 \\ x = y + 3 \end{cases}$$

$$y(y + 3) = 18$$

$$y^2 + 3y - 18 = 0$$

$$y = 3 \text{ o.k.} \rightarrow x = 6$$
~~$$y = -6 \quad y > 0$$~~

$$6 - 3 :$$

A(13,16)

() 20

M(x,0)

$$20 = \sqrt{(x-13)^2 + (0-16)^2}$$

$$400 = (x-13)^2 + 256$$

$$144 = (x-13)^2$$

$$12 = x-13 \rightarrow x = 25 \text{ o.k. } \leftarrow x > 0$$

$$-12 = x-13 \rightarrow x = -25 \text{ fault}$$

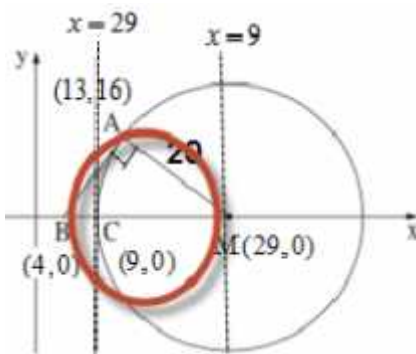
.x -

,

.M(29,0) :

,AB

,AM



$$m_{AM} = \frac{12-0}{13-29} = \frac{12}{-16} = -\frac{3}{4} \rightarrow m_{AB} = \frac{4}{3} \leftarrow m_{AB} \cdot m_{AM} = -1$$

$$\frac{4}{3} = \frac{12-0}{13-x_B}$$

$$13-x_B = 9$$

$$x_B = 4 \rightarrow \boxed{B(4,0)}$$

.B(4,0) :

BM

,($\sphericalangle A = 90^\circ$)

ΔBAM .

$$\left. \begin{aligned} x &= \frac{4+29}{2} = \frac{33}{2} = 16.5 \\ y &= 0 \end{aligned} \right\} (16,0)$$

$$R = 16.5 - 0 = 12.5$$

$$\boxed{(x-16.5)^2 + y^2 = 156.25}$$

$$.(x-16.5)^2 + y^2 = 156.25$$

ΔBAM

:

.M(29,0)

,x -

C (1) .

.C(9,0) :

.() C(9,0)

$$x = 9$$

(2)

.() M(29,0) ΔBAM

$$x = 29$$

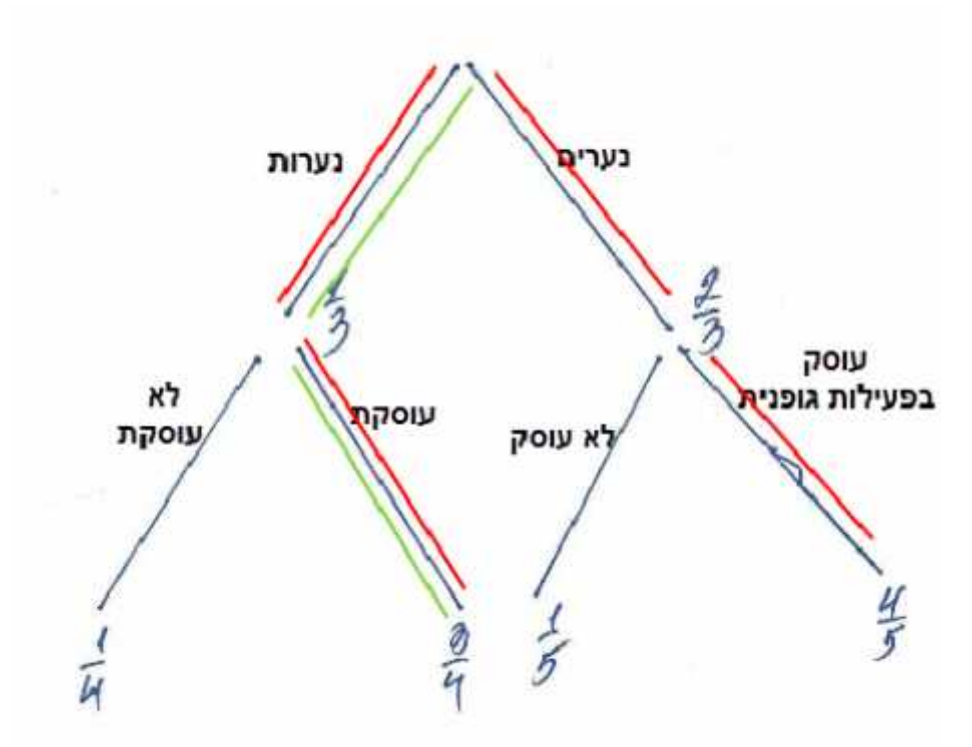
.()

$$x = k \quad 9 < k < 29$$

. $9 < k < 29$:

..

$P(boys) = \frac{2}{3}, P(girls) = \frac{1}{3}$



$P = \frac{2}{3} \cdot \frac{4}{5} + \frac{1}{3} \cdot \frac{3}{4} = \frac{47}{60}$

$\frac{47}{60}$

$P(\text{girl} / \text{practicing physical activity}) = \frac{P(\text{girl} \cap \text{practicing physical activity})}{P(\text{practicing physical activity})} = \frac{\frac{1}{3} \cdot \frac{3}{4}}{\frac{47}{60}} = \frac{15}{47}$

$\frac{15}{47}$

$$n = 4, p = \frac{1}{3} \cdot \frac{3}{4} = 0.25$$

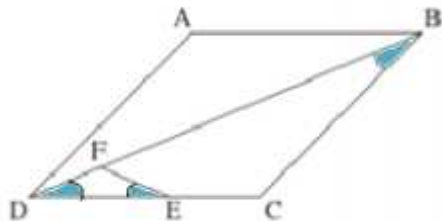
$$P = P_4(2) + P_4(3) + P_4(4)$$

$$P = \binom{4}{2} 0.25^2 (1-0.25)^{4-2} + \binom{4}{3} 0.25^3 (1-0.25)^{4-3} + 0.25^4$$

$$P = 6 \cdot 0.25^2 \cdot 0.75^2 + 4 \cdot 0.25^3 \cdot 0.75 + 0.25^4$$

$$P = \frac{67}{256}$$

$$\frac{67}{256}$$



BCEF .2 ABCD .1

$S_{\Delta DFE} = "$ 2 .4 $DB = 3DE$.3 .

ΔDFE (2) $\sphericalangle FED = \sphericalangle CBD$ (1) . : "

$S_{ABCD} \cdot \Delta DFE \sim \Delta DCB$

180° -	$\sphericalangle FED + \sphericalangle CEF = 180^\circ$	5	
	BCEF	6	2
180° -	$\sphericalangle CBD + \sphericalangle CEF = 180^\circ$	7	5
	() $\sphericalangle FED = \sphericalangle CBD$	8	7,5
(1) . . .			
	ABCD	9	1
	BC = DC	10	9
ΔDCB -	$\sphericalangle BDC = \sphericalangle CBD$	11	10
	$\sphericalangle FED = \sphericalangle BDC$	12	11,8
	ΔDFE	13	12
(2) . . .			
	() $\sphericalangle FDE = \sphericalangle FDE$	14	
	$\Delta DFE \sim \Delta DCB$	15	14,8
. . .			
	$\frac{DE}{DB} = \frac{1}{3}$	16	3
	$\frac{DF}{DC} = \frac{DE}{DB} = \frac{FE}{CB} = \frac{1}{3}$	17	16,15
	$S_{\Delta DFE} = "$ 2	18	2
$(1:3)^2 = 1:9$	$S_{\Delta DCB} = "$ 18	19	18,17,15
()	$S_{ABCD} = "$ 36	20	19,9
. . .			

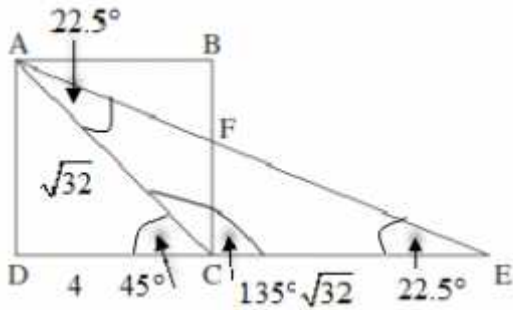
. ACE

. $\angle ACE = 135^\circ$

, $\angle ACD = 45^\circ$,

. ($\angle CAE = \angle AEC = \frac{180^\circ - 135^\circ}{2} = 22.5^\circ$, $AC = CE$

. $\angle CAE = \angle AEC = 22.5^\circ$, $\angle ACE = 135^\circ$:



$S_{\triangle ACE} = \frac{1}{2} AC \cdot CE \cdot \sin 135^\circ = 8\sqrt{2}$.

$8\sqrt{2} = \frac{AC \cdot CE \cdot \sin 135^\circ}{2}$

$16\sqrt{2} = (AC)^2 \sin 135^\circ$

$\frac{16\sqrt{2}}{\sin 135^\circ} = (AC)^2$

$32 = (AC)^2$

$AC = \sqrt{32}$

$\triangle ACD$

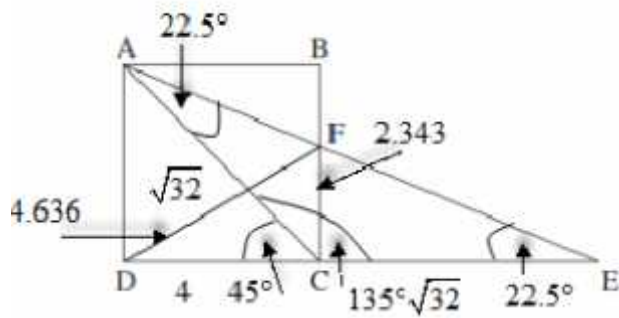
$(AD)^2 + (DC)^2 = (AC)^2$

$2(DC)^2 = 32$

$(DC)^2 = 16$

$DC = 4$

. " 4 :



DF

$$CE = AC = \sqrt{32}$$

$\triangle CEF$

$$\tan 22.5^\circ = \frac{CF}{CE}$$

$$\sqrt{32} \tan 22.5^\circ = CF$$

$$CF = 2.343$$

$\triangle DCF$

$$(DC)^2 + (CF)^2 = (DF)^2$$

$$4^2 + 2.343^2 = (DF)^2$$

$$21.49 = (DF)^2$$

$$DF = 4.636$$

$$DF = 4.636$$

$\triangle DFE$

$\triangle DFE$

$$\frac{DF}{\sin 22.5^\circ} = 2R$$

$$\frac{4.636}{2 \sin 22.5^\circ} = R$$

$$R = 6.057$$

$$R = 6.057 \quad \triangle DFE$$

:

$$f(x) = \frac{5}{(2x-4)^2}$$

$$(2x-4)^2 \neq 0 \rightarrow 2x \neq 4 \rightarrow \boxed{x \neq 2}$$

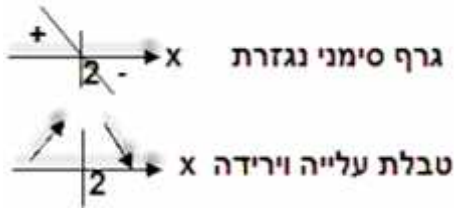
$$x \neq 2$$

$$y = 0 \quad (2) \quad (0)$$

$$x = 2$$

$$x = 2$$

$$x = 2, y = 0$$



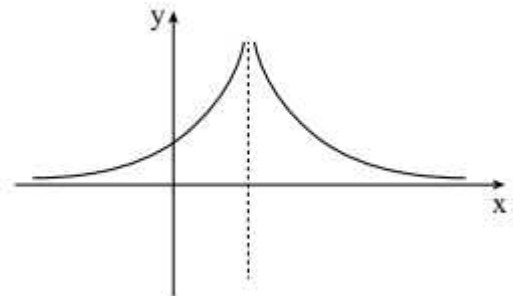
$$f'(x) = \frac{0 - 5 \cdot 2 \cdot (2x-4) \cdot 2}{(2x-4)^4}$$

$$f'(x) = \frac{20(4-2x)}{(2x-4)^4}$$

$$x = 2$$

$$x > 2 : \quad , \quad x < 2 :$$

$$f(x) = \frac{5}{(2x-4)^2}$$



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

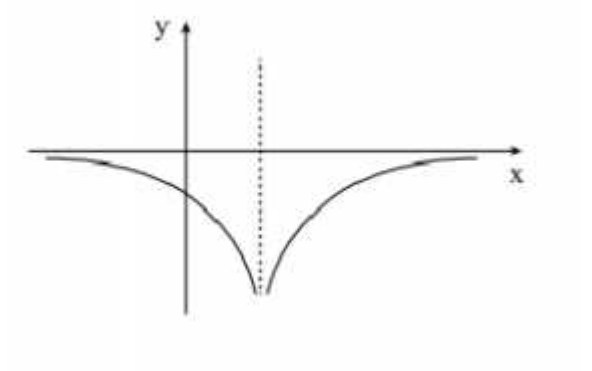
$$, -f'(x)$$

$$x = 2, y = 0 : \quad (1)$$

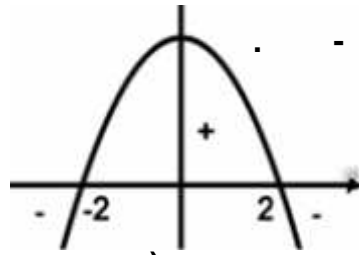
$$y = 0, \quad -$$

$$, -f(x) \quad (2)$$

$$x \neq 2 \quad -f(x) - , x \neq 2 \quad f(x) -$$



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



$$4-x^2 > 0$$

$$4-x^2 = 0$$

$$x = 2, \quad x = -2$$

("", ",)

$$-2 \leq x \leq 2$$

(1)

$$f(0) = 0\sqrt{4-0^2} = 0 \rightarrow (0, 0) \quad x = 0 : y$$

$$0 = x\sqrt{4-x^2} \rightarrow x = -2, 0, 2 \quad y = 0 : x$$

$$(-2, 0), (2, 0), (0, 0)$$

(2)

$$(-2, 0), (2, 0)$$

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

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

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

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

$$x^2 = 2$$

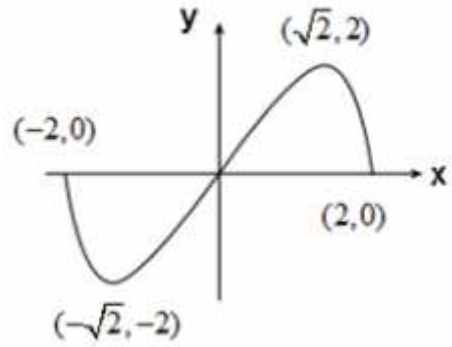
$$x = \sqrt{2} \rightarrow y = \sqrt{2} \cdot \sqrt{4-\sqrt{2}^2} = 2 \rightarrow (\sqrt{2}, 2)$$

$$x = -\sqrt{2} \rightarrow y = -\sqrt{2} \cdot \sqrt{4-(-\sqrt{2})^2} = -2 \rightarrow (-\sqrt{2}, -2)$$

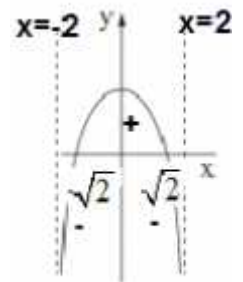
(, , ,)

x	-2		$-\sqrt{2}$		$\sqrt{2}$		2
$f(x)$	0		-2		2		0
$f'(x)$		-	0	+	0	-	
	Max	↘	Min	↗	Max	↘	Min

(-2,0), $(-\sqrt{2}, -2)$, $(\sqrt{2}, 2)$, (2,0) :



.IV $f'(x)$



IV

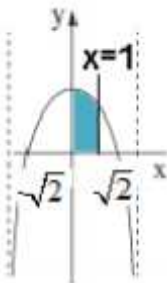
. $f(x)$

$x = \pm\sqrt{2}$

()

$x = \pm 2$ (3)

. $f'(x)$



$$S = \int_0^1 (f'(x) - 0) dx = f(x) \Big|_0^1$$

$$x = 1: f(1) = 1 \cdot \sqrt{4 - 1^2} = \sqrt{3}$$

$$x = 0: f(0) = 0$$

$$S = \sqrt{3} - 0$$

$$\boxed{S = \sqrt{3}}$$

. " $\sqrt{3}$:

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

x

$0 = x^3 - 6x^2 + 9x$

$0 = x(x^2 - 6x + 9)$

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

$x = 0, 3$

$A(0,0), B(3,0)$

ABC *עליונה הטע מקסימום*

, , AB = 3

$f(x) = x^3 - 6x^2 + 9x$, $0 < x < 3$,

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

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

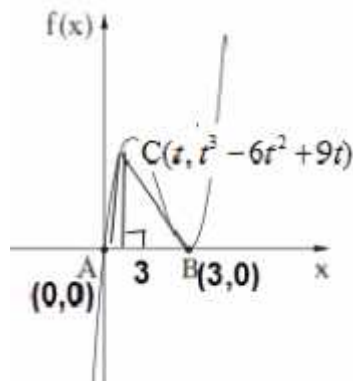
$x = 1, x = 3$

$f(1) = 1^3 - 6 \cdot 1^2 + 9 \cdot 1 = 4 \rightarrow C(1, 4)$, () $(x_B = 3) x_C = 1$

" " , ,

$0 < x < 3$

$C(t, t^3 - 6t^2 + 9t)$



$S_{\Delta ABC} = \frac{AB \cdot y_C}{2}$

$S_{\Delta ABC} = \frac{3(t^3 - 6t^2 + 9t)}{2}$

$S_{\Delta ABC} = 1.5t^3 - 9t^2 + 13.5t$

$S' = 4.5t^2 - 18t + 13.5$

$0 = 4.5t^2 - 18t + 13.5$

$t = 1, t = 3$

$s'(0.5) = 5.625 > 0, s'(2) = -4.5 < 0 \rightarrow Max$

ABC , C(1, 4)

, f(x) () C(1, 4) , :