

II $y = \dots$, I (\dots) $x = \dots$ (1).

	()	()		
$\frac{6}{x}$	$\frac{1}{x}$	6	I	
$\frac{6}{y}$	$\frac{1}{y}$	6	II	
0.25	$\frac{1}{x}$	0.25x	I	
0.25	$\frac{1}{y}$	0.25y	II	
0.3	$\frac{1}{x}$	0.3x	I	

$$\frac{6}{x} + \frac{6}{y} = 1, \quad 6$$

$$0.25x + 0.25y = m, \quad m, \quad " ,$$

$$\begin{cases} \frac{6}{x} + \frac{6}{y} = 1 \\ 0.25x + 0.25y = m \rightarrow x + y = 4m \end{cases}$$

$$\Leftrightarrow \frac{6}{x} + \frac{6}{4m-x} = 1$$

$$24m - 6x + 6x = 4mx - x^2 \rightarrow x^2 - 4mx + 24m = 0$$

$$\Leftrightarrow x_{1,2} = \frac{4m \pm \sqrt{16m^2 - 96m}}{2}$$

$$\Leftrightarrow \boxed{x_{1,2} = 2m \pm 2\sqrt{m^2 - 6m}} \quad m^2 - 6m > 0 \rightarrow m \geq 6 \quad \leftarrow m > 0$$

$$2m \pm 2\sqrt{m^2 - 6m}, m \geq 6 :$$

$$\boxed{m = 6}, \Delta = 0 \quad (2)$$

$$x = 10 \quad 0.3x = 3$$

$$10 = 2m \pm 2\sqrt{m^2 - 6m}$$

$$5 - m = \pm\sqrt{m^2 - 6m}$$

$$25 - 10m + m^2 = m^2 - 6m$$

$$25 = 4m$$

$$m = 6.25$$

$$10 = 2 \cdot 6.25 - 2\sqrt{6.25^2 - 6 \cdot 6.25} \rightarrow 10 = 10 \quad o.k.$$

$$m = 6.25 :$$

"

$$m \neq 0, \quad x^2 - 2(m+1)x + m^2 = 0$$

$$a = 1 \quad b = -2(m+1) \quad c = m^2$$

()

$$\Delta > 0 :$$

$$\underline{\Delta > 0}$$

$$\Delta = b^2 - 4ac < 0$$

$$(-2(m+1))^2 - 4 \cdot 1 \cdot m^2 > 0$$

$$4(m^2 + 2m + 1) - 4m^2 > 0$$

$$4m^2 + 8m + 4 - 4m^2 > 0$$

$$8m + 4 > 0$$

$$8m > -4$$

$$m > -0.5$$

$$m > -0.5, \quad m \neq 0$$

$$m \neq 0$$

$$m > -0.5, \quad m \neq 0 :$$

s - r .

$$r, m+1, s - \quad (1)$$

$$r, m+1, s \quad r + s = \frac{-b}{a} = 2(m+1)$$

$$r, m, s - \quad (2)$$

$$r, m, s \quad r \cdot s = \frac{c}{a} = m^2$$

$$m \neq 0$$

- $\Delta > 0$

$$m > -1 \quad 2(m+1) > 0, \quad -r + s > 0$$

$$m > -0.5$$

$$m \neq 0 \quad r \cdot s = m^2 > 0, \quad -r \cdot s > 0$$

$$m \quad s > 0 \quad r > 0 :$$

- \bar{B}

- B

- \bar{A}

- A

$$(P(B))^3 = 0.064 \rightarrow P(B) = 0.4 \rightarrow P(\bar{B}) = 0.6$$

$$2 \cdot P(A/B) = P(A/\bar{B})$$

$$2 \cdot \frac{P(A \cap B)}{P(B)} = \frac{P(A \cap \bar{B})}{P(\bar{B})}$$

$$2 \cdot \frac{P(A \cap B)}{0.4} = \frac{P(A \cap \bar{B})}{0.6}$$

$$P(A \cap B) = \frac{1}{3} P(A \cap \bar{B})$$

(') $P(A \cap \bar{B}) = 3x, P(A) = 4x \quad P(A \cap B) = x$

$$P(B/A) = \frac{P(B \cap A)}{P(A)} = \frac{x}{4x} = 0.25$$

. 0.25 :

$\frac{81}{256}$

$$(P(\bar{A}/\bar{B}))^4 = \frac{81}{256} \rightarrow P(\bar{A}/\bar{B}) = 0.75$$

$$P(\bar{A}/\bar{B}) = \frac{P(\bar{A} \cap \bar{B})}{P(\bar{B})}$$

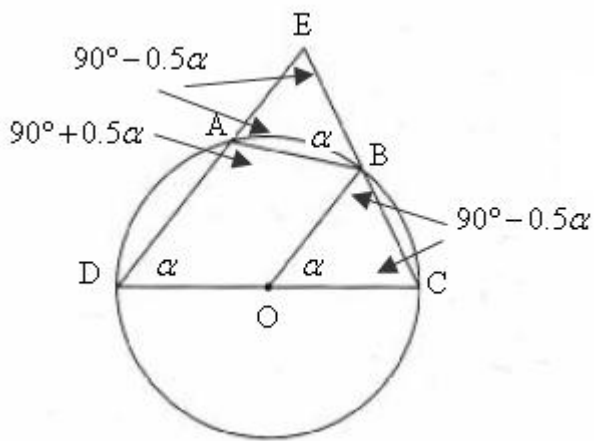
$$0.75 = \frac{P(\bar{A} \cap \bar{B})}{0.6}$$

$$P(\bar{A} \cap \bar{B}) = 0.45$$

	\bar{A}	A	
0.4	0.35	$x = 0.05$	-B
0.6	0.45	$3x = 0.15$	- \bar{B}
1	0.8	$4x = 0.2$	

0.05

. 0.05 :



O

DC .1

OB || DE .2

$\angle BOC = r$.3

$S_{\Delta OBC} = S_{\Delta BEA}$.4

r " $\angle ABO$. : "

$\Delta OBC \cong \Delta BEA$.

	O	DC	5	1
		$\angle BOC = r$	6	3
		OB = OC	7	5
OBC "		$\angle OBC = \angle OCB = 90^\circ - 0.5r$	8	7,6
180°		$\angle DAB = 90^\circ + 0.5r$	9	8
		OB DE	10	2
180° -		$\angle ABO = 90^\circ - 0.5r$	11	10,9
. . .				
180° -		$\angle EBA = r$	12	11,8
		() $\angle EBA = \angle BOC = r$	13	12,6
		() $\angle E = \angle OBC$	14	10
		$\Delta OBC \sim \Delta BEA$	15	14,13
		$\frac{OB}{BE} = \frac{OC}{BA} = \frac{BC}{EA}$	16	15
		$S_{\Delta OBC} = S_{\Delta BEA}$	17	4
		$\frac{OB}{BE} = \frac{OC}{BA} = \frac{BC}{EA} = 1$	18	17,16,15
		$\Delta OBC \cong \Delta BEA$	19	18
. . .				

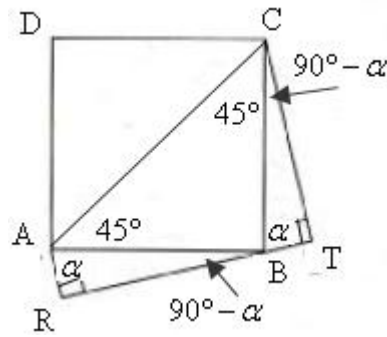
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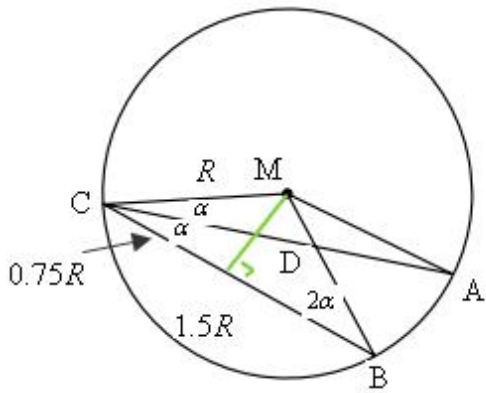
, , OB = OC

"



\overline{ABCD} .1
 $\angle R = 90^\circ$.2
 $\angle T = 90^\circ$.3
 $AR + CT = TR$. : "
 TR ACTR .

	$\angle R = 90^\circ$	4	2
	$\angle T = 90^\circ$	5	3
	$\angle CBT = r$	6	
$180^\circ \triangle BCT$	$\angle BCT = 90^\circ - r$	7	6,5
	ABCD	8	1
	$\angle CBA = 90^\circ$	9	8
$180^\circ -$	$\angle ABR = 90^\circ - r$	10	9,6
	() $\angle ABR = \angle BCT$	11	10,7
	() $AB = BC$	12	8
$180^\circ \triangle BAR$	$\angle BAR = r$	14	10,4
	() $\angle BAR = \angle CBT$	15	14,6
	$\triangle BAR \cong \triangle CBT$	16	15,12,11
	$RB + BT = TR$	17	
	$RB = CT$	18	16
	$BT = AR$	19	16
	$AR + CT = TR$	20	19,18,17
. . . .			
$180^\circ -$	$CT \parallel RA$	21	5,4
	$\angle RAC = 45^\circ + r,$ $\angle ACT = 135^\circ - r$	22	14,6
	ACTR $r = 45^\circ$	23	22,5,4
	$S_{ACTR} = TR \cdot CT = \frac{TR \cdot 2CT}{2}$ $S_{ACTR} = \frac{TR(AR + CT)}{2}$ <div style="border: 1px solid black; padding: 2px; display: inline-block;">$S_{ACTR} = 0.5(TR)^2$</div>	24	23,20
	ACTR $r \neq 45^\circ$	25	21
	$S_{ACTR} = \frac{(AR + CT) \cdot TR}{2}$	26	25,20
	$S_{ACTR} = \frac{TR \cdot TR}{2}$	27	26,20
	<div style="border: 1px solid black; padding: 2px; display: inline-block;">$S_{ACTR} = 0.5(TR)^2$</div>	28	27
. . . .			



(1.5

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() $S_{\triangle CBD} = 1.5S_{\triangle CDM}$

) $\frac{BD}{MD} = 1.5$

() $\angle BCD = r$

() $\angle CBM = 2\angle ACB$

() $\angle CBD = 2r$

() $MC = MB = R$

$\triangle CMD$) $\angle MCB = 2r$

() $\angle MCD = r$

() $\angle MCD = \angle BCD = r$

() $\frac{BC}{MC} = \frac{BD}{MD} = 1.5$

$BC = 1.5R$

$ME \perp BC$

) $BE = CE$

$MC = 0.75R$

$\triangle MCE$

$\cos \angle MCB = \frac{CE}{CM}$

$\cos 2r = \frac{0.75R}{R}$

$2r = 41.41^\circ$

$\angle CBM = 41.41^\circ :$

$$.b > 2, \quad f(x) = \frac{(x-b)^2}{x^2-4} :$$

$$x^2 - 4 \neq 0 \rightarrow x^2 \neq 4 \rightarrow \boxed{x \neq \pm 2} \quad (1)$$

$$y = 1, \quad \lim_{x \rightarrow \infty} \frac{(x-b)^2}{x^2-4} = \lim_{x \rightarrow \infty} \frac{1 - \frac{2b}{x} + \frac{b^2}{x^2}}{1 - \frac{4}{x^2}} = \lim_{x \rightarrow \infty} \frac{1-0+0}{1-0} = 1$$

$$x = 2, x = -2, \quad \lim_{x \rightarrow 2} \frac{(x-b)^2}{x^2-4} = \frac{(2-b)^2}{4-4} = \frac{+}{0^+} = \pm\infty \leftarrow b > 2$$

$$\lim_{x \rightarrow -2} \frac{(x-b)^2}{x^2-4} = \frac{(2-b)^2}{4-4} = \frac{+}{0^+} = \pm\infty \leftarrow b > 2$$

$$x = 2, x = -2, \quad y = 1, \quad x \neq \pm 2 :$$

$$(0, -\frac{b^2}{4}) \quad x = 0 \quad y, \quad (b, 0) : \quad y = 0 \quad x \quad (2)$$

$$. (0, -\frac{b^2}{4}), (b, 0) :$$

(3)

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

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

$$0 = (x-b)(bx-4)$$

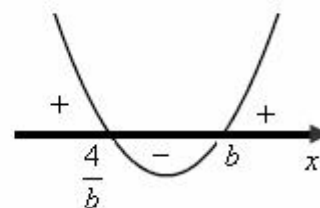
$$x = b \rightarrow (b, 0)$$

$$x = \frac{4}{b} \rightarrow \left(\frac{4}{b}, \frac{4-b^2}{4}\right) f\left(\frac{4}{b}\right) = \frac{\left(\frac{4}{b}-b\right)^2}{\left(\frac{4}{b}\right)^2-4} = \frac{(4-b^2)^2}{16-4b^2} = \frac{(4-b^2)^2}{4(4-b^2)} = \frac{4-b^2}{4}$$

⊂ פרבולה בעלת מינימום

גרף סימני הנגזרת

$$b > 2 \rightarrow b > \frac{4}{b}$$



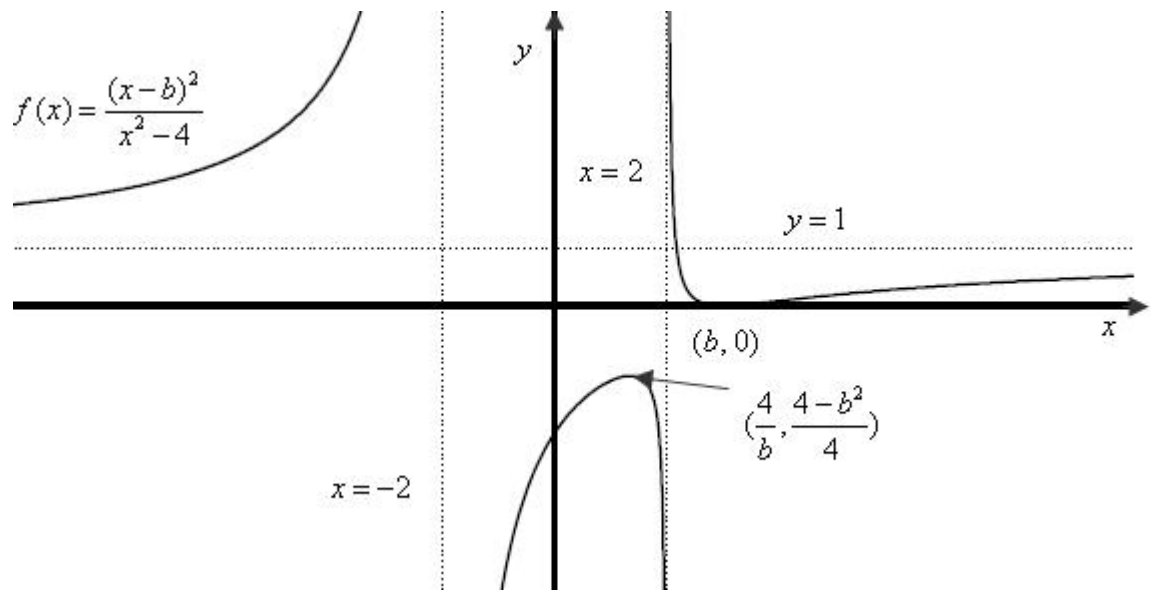
$$x = \frac{4}{b}$$

$$x = b$$

$$\left(\frac{4}{b}, \frac{4-b^2}{4}\right), \quad (b, 0) :$$

..

$$b > 2$$



$$f''(x)$$

—

$$f'(x)$$

$$f(x)$$

$$f(x)$$

$$\frac{4}{b} < x < 2$$

$$2 < x < b$$

$$f(x)$$

$$f''(x) < 0$$

$$-2 < x < 2$$

$$f''(x)$$

$$f(x)$$

.(

$$, x > b$$

)

$$\frac{4}{b} < x < 2$$

$$f''(x)$$

—

$$f'(x)$$

$$\frac{4}{b} < x < 2 :$$

$$-3f \leq x \leq 3f \quad f(x) = \frac{2\cos^2\left(\frac{x}{2}\right) - 1}{2\cos^2\left(\frac{x}{2}\right)}$$

$$f(-x) = \frac{2\cos^2\left(-\frac{x}{2}\right) - 1}{2\cos^2\left(-\frac{x}{2}\right)} = \frac{2\cos^2\left(\frac{x}{2}\right) - 1}{2\cos^2\left(\frac{x}{2}\right)} = f(x)$$

$$2\cos^2\left(\frac{x}{2}\right) \neq 0 \rightarrow \cos\left(\frac{x}{2}\right) \neq 0 \rightarrow \frac{x}{2} \neq \frac{\pi}{2} + f k \rightarrow \boxed{x \neq \pi + 2f k}$$

$$(k = 0, 1, -1, -2) \quad x = -3f, \quad x = -f, \quad x = f, \quad x = 3f :$$

$$f(x) = \frac{2\cos^2\left(\frac{x}{2}\right) - 1}{2\cos^2\left(\frac{x}{2}\right)} = 1 - \frac{1}{2\cos^2\left(\frac{x}{2}\right)} = 1 - \frac{1}{\cos x + 1}$$

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

$$0 = \sin x \rightarrow x = f k \rightarrow k = -2, 0, 2 \rightarrow x = -2f, 0, 2f$$

$$f''(x) = -\cos x \rightarrow f''(-2f) = -1 < 0, f''(0) = -1 < 0 \rightarrow \text{Max}$$

$$f(-2f) = f(2f) = 1 - \frac{1}{\cos 2f + 1} = 0.5, \quad f(0) = 1 - \frac{1}{\cos 0 + 1} = 0.5$$

$$x = 2f$$

$$f'(x) = 0 \quad f'(x) \quad ,$$

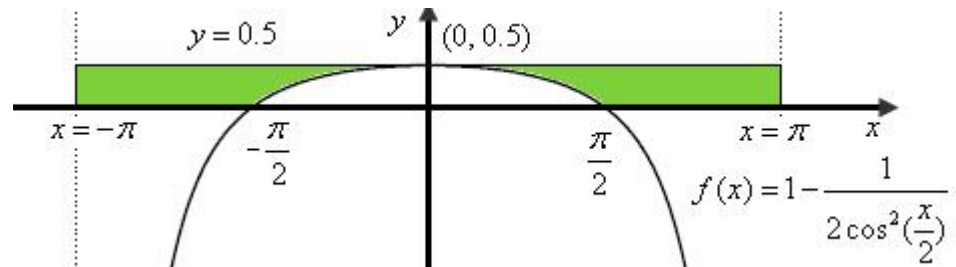
$$(-2f, 0.5), \quad (0, 0.5), \quad (2f, 0.5) :$$

$$f(x) = 1 - \frac{1}{2 \cos^2\left(\frac{x}{2}\right)}$$

$$y = 0.5$$

$$x = \frac{f}{2} + f k \quad \cos x = 0 \quad x =$$

$$x = \frac{f}{2}, x = -\frac{f}{2} \quad k = 0, -1$$



$$S_{\text{GREEN}} = S_{\text{MALBEN}} - S_{\text{WHITE}} :$$

$$S_{\text{MALBEN}} = 2f \cdot 0.5 = f$$

$$S_{\text{WHITE}} = \int_{-\frac{f}{2}}^{\frac{f}{2}} \left(1 - \frac{1}{2 \cos^2\left(\frac{x}{2}\right)} - 0\right) dx$$

$$S_{\text{WHITE}} = \left[x - \frac{0.5}{0.5} \tan \frac{x}{2} \right]_{-\frac{f}{2}}^{\frac{f}{2}}$$

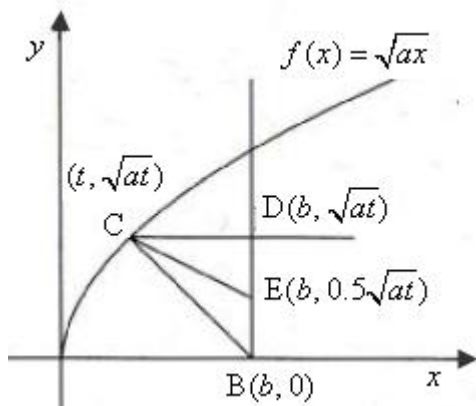
$$S_{\text{WHITE}} = \left(\frac{f}{2} - \tan \frac{f}{4}\right) - \left(-\frac{f}{2} - \tan \frac{-f}{4}\right)$$

$$S_{\text{WHITE}} = \left(\frac{f}{2} - 1\right) - \left(-\frac{f}{2} + 1\right)$$

$$\boxed{S_1 = f - 2}$$

$$S_{\text{GREEN}} = f - (f - 2) = 2$$

" 2 :



$a > 0, f(x) = \sqrt{ax}$

.EBC εφελετη ηθε ριηιρη

.C x - - t :

$C(t, \sqrt{at})$

C

. y -

BD

$E(b, 0.5\sqrt{at}) - , D(b, \sqrt{at})$

$BE = 0.5\sqrt{at}$

$CD = b - t$

$S_{\Delta EBC} = \frac{0.5\sqrt{at} \cdot (b-t)}{2}$

$S_{\Delta EBC} = 0.25 \cdot (\sqrt{at} \cdot (b-t))$

$S'(t) = 0.25 \cdot (\frac{a(b-t)}{2\sqrt{at}} - \sqrt{at})$

$S'(t) = 0.25 \cdot \frac{ab - at - 2at}{2\sqrt{at}}$

$S'(t) = \frac{a(b-3t)}{8\sqrt{at}}$

$0 = (b-3t) \leftarrow a > 0$

$t = \frac{b}{3} \quad s'(0.1b) = \frac{+(b-0.3b)}{+} > 0, \quad s'(0.4b) = \frac{+(b-1.2b)}{+} < 0 \leftarrow b > 0$

$t = \frac{b}{3}, \text{ Max}$

$C(2, 4)$

$\frac{b}{3} = 2 \rightarrow \boxed{b=6}$

$4 = \sqrt{a \cdot \frac{b}{3}} = \sqrt{a \cdot \frac{6}{3}} = \sqrt{2a}$

$\sqrt{16} = \sqrt{2a} \rightarrow \boxed{a=8}$

$b = 6, a = 8 :$

. CBE

C(2, 4)

. a = 8

$4 = \sqrt{a \cdot 2}$

$y_c = 4 \quad t = 2$

!!! $b = 6 \quad 0 = 0.25 \cdot (\frac{8(b-2)}{2\sqrt{8 \cdot 2}} - \sqrt{8 \cdot 2})$

$t = 2, a = 8$