

(, ") A x -
 (, ") B y -
 : .(") B A s -

s - "	v - "	t -		
2x	x	2		
2y	y	2		
$2\frac{2}{3}x$	x	$2\frac{2}{3}$		
$2\frac{2}{3}y$	y	$2\frac{2}{3}$		
B s-40 " 40	x	$\frac{s-40}{x}$		
" 40 2s+40 ,	y	$\frac{2s+40}{y}$		

.2x + 2y = s :

.() (A)

. $2\frac{2}{3}y = 2x + 2x + 2\frac{2}{3}x$: (A)

$\frac{s-40}{x} = \frac{2s+40}{y}$,B " 40 ,

$$\begin{cases} (1) & 2x + 2y = s \\ (2) & 2\frac{2}{3}y = 4x + 2\frac{2}{3}x \rightarrow y = 2.5x \\ (3) & \frac{s-40}{x} = \frac{2s+40}{y} \end{cases}$$

(2),(3) $\frac{s-40}{x} = \frac{2s+40}{2.5x} \quad / \cdot 2.5x$
 $2.5s - 100 = 2s + 40$
 $0.5s = 140$
 $s = 280$

(1),(2) $2x + 2 \cdot 2.5x = 280$
 $7x = 280$
 $x = 40 \quad y = 100$

. " 40 :

"

$$n = 1 \quad .1.$$

$$S_1 = a_1 = 1 : \quad \frac{1}{6} \cdot 1(1+1)(2 \cdot 1+1) = 1 :$$

$$n = 1$$

$$, (\quad) \quad n = k \quad .2$$

$$, S_1 + S_2 + S_3 + \dots + S_k = \frac{1}{6} k(k+1)(2k+1) :$$

$$S_{k+1} = \frac{(k+1)[2 \cdot 1 + 2(k+1-1)]}{2} :$$

$$. n = k + 1 \quad .3$$

$$S_{k+1} = \frac{(k+1)[2 \cdot 1 + 2(k+1-1)]}{2} = (k+1)^2 \quad a_1 = 1, d = 2$$

: "

$$\frac{S_1 + S_2 + S_3 + \dots + S_k + S_{k+1}}{\downarrow} = \frac{1}{6} (k+1)(k+2)(2(k+1)+1)$$

$$\Leftrightarrow \frac{1}{6} k(k+1)(2k+1) + (k+1)^2 = \frac{1}{6} (k+1)(k+2)(2k+3)$$

$$\Leftrightarrow \frac{1}{6} (k+1)[k(2k+1) + 6(k+1)] = \frac{1}{6} (k+1)(k+2)(2k+3)$$

$$\Leftrightarrow \frac{1}{6} (k+1)(2k^2 + k + 6k + 6) = \frac{1}{6} (k+1)(k+2)(2k+3)$$

$$\Leftrightarrow \frac{1}{6} (k+1)(2k^2 + 7k + 6) = \frac{1}{6} (k+1)(k+2)(2k+3)$$

$$\Leftrightarrow \frac{1}{6} (k+1)(k+2)(2k+3) = \frac{1}{6} (k+1)(k+2)(2k+3)$$

$$, \quad n = k \quad , n = 1 \quad .4$$

$$. \quad n \quad , \quad - \quad , \quad n = k + 1$$

$$: \quad " \quad 2k^2 + 7k + 6$$

$$2k^2 + 7k + 6 = 0$$

$$k_{1,2} = \frac{-7 \pm 1}{4} \rightarrow k = -2, -\frac{3}{2}$$

$$2(k+2)\left(k+\frac{3}{2}\right)$$

$$(k+2)(2k+3)$$

$$b_{n+1} = \frac{b_n}{b_n - 1} :$$

n

$$b_{19} + b_{20} = 4.5$$

$$b_{20} = \frac{b_{19}}{b_{19} - 1}$$

$$b_{19} = t :$$

$$t + \frac{t}{t-1} = 4.5$$

$$t(t-1) + t = 4.5(t-1)$$

$$t^2 - t + t = 4.5t - 4.5$$

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

$$t_{1,2} = \frac{4.5 \pm 1.5}{2}$$

$$t = 3 \rightarrow b_{19} = 3 \rightarrow b_{20} = 1.5$$

$$t = 1.5 \rightarrow \cancel{b_{19} = 1.5} \leftarrow b_{19} > 2$$

$$b_{10} = 1.5$$

$$b_{n+2} = b_n$$

$$b_{20} = 1.5$$

(- , ,)

$$b_{10} = 1.5 :$$

- \bar{A} - A - S
- \bar{B} - B

$$P(B/\bar{A}) = 0.5 \rightarrow P(\bar{B}/\bar{A}) = 0.5$$

$$P(A/\bar{B}) = \frac{2}{3} \rightarrow P(\bar{A}/\bar{B}) = \frac{1}{3}$$

$$P(A \cap \bar{B}) = 0.2$$

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

$$0.5 = \frac{0.1}{P(\bar{A})}$$

$$\boxed{P(\bar{A}) = 0.2}$$

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

$$\frac{2}{3} = \frac{0.2}{P(\bar{B})}$$

$$\boxed{P(\bar{B}) = 0.3}$$

	\bar{A}	A	
0.7	0.1	0.6	- B
0.3	0.1	0.2	- \bar{B}
1	0.2	0.8	

$$N(S) = 2,000 \quad , \quad 2,000$$

$$N(A) = P(A) \cdot N(S)$$

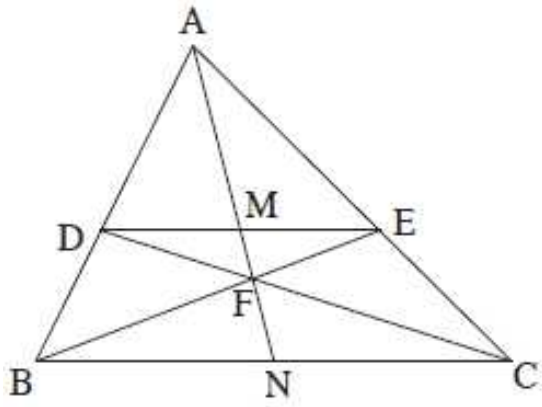
$$N(A) = 0.8 \cdot 2,000 = 1,600$$

$$1,600 :$$

$$P(B/A) = \frac{P(B \cap A)}{P(A)} = \frac{0.6}{0.8} = 0.75$$

$$N(B/A) = P(B/A) \cdot N(A) = 0.75 \cdot 1,600 = 1,200$$

$$1,200 :$$



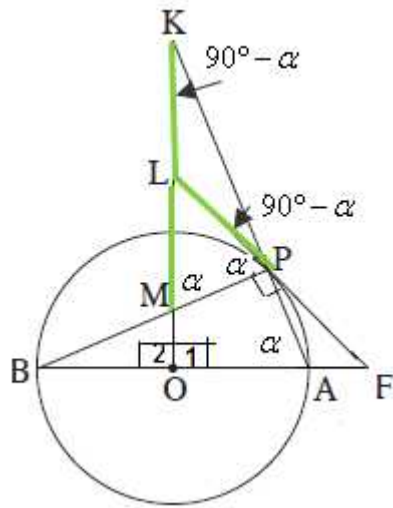
DE || BC .1

$$\frac{DM}{BN} = \frac{EM}{CN} \quad . \quad : "$$

$$\frac{EM}{BN} = \frac{DM}{CN} \quad .$$

$$BN = CN , DM = EM .$$

	DE BC	2	1
1	$\frac{DM}{BN} = \frac{AM}{AN}$	3	2
1	$\frac{AM}{AN} = \frac{EM}{CN}$	4	2
	$\boxed{\frac{DM}{BN} = \frac{EM}{CN}}$	5	4,3
. . .			
2	$\frac{EM}{BN} = \frac{MF}{FN}$	6	2
2	$\frac{MF}{FN} = \frac{DM}{CN}$	7	2
	$\boxed{\frac{EM}{BN} = \frac{DM}{CN}}$	8	7,6
. . .			
-	$\frac{DM}{EM} = \frac{BN}{CN}$	9	5
-	$\frac{DM}{EM} = \frac{CN}{BN}$	10	8
	$\frac{BN}{CN} = \frac{CN}{BN}$	11	10,9
	$\boxed{BN = CN}$	12	11
	$\boxed{EM = DM}$	13	12,10
. . .			



$O_1 = O_2 = 90^\circ$.2 O

AB .1

.P

LF .3

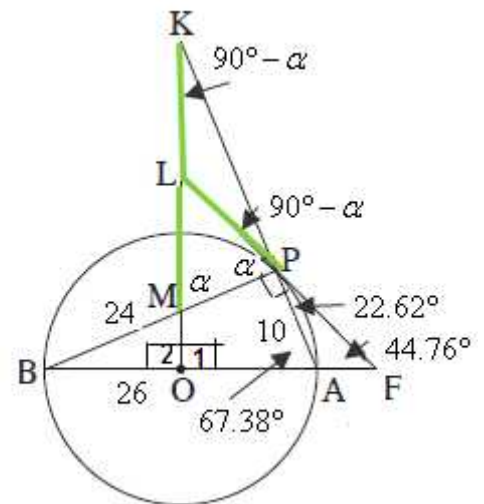
" 13

.5 BP = " 24 .4 :

AF . KL = LM . : "

	$O_1 = O_2 = 90^\circ$	6	2
	O AB	7	1
	$\sphericalangle APB = 90^\circ$	8	7
	P LF	9	3
180°	$\sphericalangle KPM = 90^\circ$	10	8
	$\sphericalangle PAB = r$	11	
$180^\circ \triangle AKO$	$\sphericalangle K = 90^\circ - r$	12	11,6
$180^\circ \triangle KPM$	$\sphericalangle KMP = r$	13	12,10
	$\sphericalangle LPM = r$	14	11,9
	$\sphericalangle KMP = \sphericalangle LPM$	15	14,13
$\triangle LPM$	$LP = LM$	16	15
	$\sphericalangle KPL = 90^\circ - r$	17	14,10
	$\sphericalangle KPL = \sphericalangle K$	18	17,12
$\triangle KLP$	$LP = LK$	19	18
	$KL = LM$	20	19,16
...			

ונצבור פטריאוןומטריה פסעיף ב



() BP = " 24

BA = " 26

() " 13

(Δ BAP) AP = " 10

Δ BAP - r

$$\tan r = \frac{24}{10}$$

$$r = 67.38^\circ$$

(180°) \sphericalangle FPA = $90^\circ - r = 90 - 67.38 = 22.62^\circ$

(Δ FAP) \sphericalangle F = 44.76°

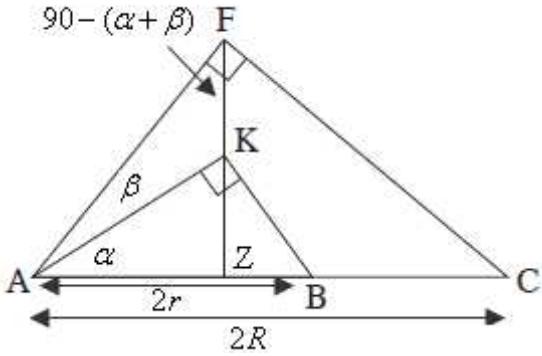
Δ FPA

$$\frac{AF}{\sin \sphericalangle FPA} = \frac{AP}{\sin \sphericalangle F}$$

$$\frac{AF}{\sin 22.62^\circ} = \frac{10}{\sin 44.76^\circ}$$

AF = 5.462

AF = " 5.462 :



∴ ΔAFC - ΔAKB (1) .

) AB = 2r - AC = 2R

$$\cos \alpha = \frac{AZ}{AK} \quad : \quad \underline{\Delta AKZ}$$

$$\cos(\alpha + \beta) = \frac{AZ}{AF} \quad : \quad \underline{\Delta AFZ}$$

$$\frac{\cos \alpha}{\cos(\alpha + \beta)} = \frac{AF}{AK} \quad "$$

$$\frac{AF}{AK} = \frac{\cos \alpha}{\cos(\alpha + \beta)} :$$

$$\cos \alpha = \frac{AK}{2r} \quad : \quad \underline{\Delta AKB} \text{ (2)}$$

$$\cos(\alpha + \beta) = \frac{AF}{2R} \quad : \quad \underline{\Delta AFC}$$

$$\frac{\cos(\alpha + \beta)}{\cos \alpha} = \frac{AF \cdot r}{AK \cdot R} \quad "$$

$$\frac{R}{r} = \frac{\cos^2 \alpha}{\cos^2(\alpha + \beta)} : \quad \frac{\cos(\alpha + \beta)}{\cos \alpha} = \frac{\cos \alpha}{\cos(\alpha + \beta)} \cdot \frac{r}{R} \text{ (1)}$$

$$\frac{R}{r} = \frac{\cos^2 \alpha}{\cos^2(\alpha + \beta)} :$$

t , ΔAKF .

$$\frac{AK}{\sin(90^\circ - (\alpha + \beta))} = 2t$$

$$\frac{2r \cos \alpha}{2 \cos(\alpha + \beta)} = t$$

$$\sqrt{\frac{R}{r}} \cdot r = t$$

$$\boxed{t = \sqrt{R} \sqrt{r}} \quad \leftarrow r > 0$$

$$\sqrt{R} \sqrt{r} \quad \Delta AKF \quad :$$

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

$$0 - \quad - \quad , \quad (1)$$

$$x \geq 0 \quad 2x \geq 0 \quad x \neq 2 \quad , \sqrt{2x-2} \neq 0$$

$$x \geq 0, x \neq 2 : \quad :$$

$$: \quad (2)$$

$$f(x) = \frac{x}{\sqrt{2x-2}} = \frac{x}{\sqrt{x}\sqrt{2}-2} = \frac{\sqrt{x}}{\sqrt{2}-\frac{2}{\sqrt{x}}} \leftarrow x > 0$$

$$\lim_{x \rightarrow +\infty} \frac{\sqrt{x}}{\sqrt{2}-\frac{2}{\sqrt{x}}} = +\infty$$

$$\lim_{x \rightarrow 2^+} \frac{x}{\sqrt{2x-2}} = +\infty, \quad \lim_{x \rightarrow 2^-} \frac{x}{\sqrt{2x-2}} = -\infty \rightarrow \boxed{x=2}$$

$$x = 2 : \quad :$$

$$(0,0) \quad x = 0 \quad , \quad y \quad (3)$$

x -

$$(0,0) :$$

$$(0,0) (4)$$

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

$$f'(x) = \frac{\sqrt{2x-2} - 0.5\sqrt{2x}}{(\sqrt{2x-2})^2} \leftarrow x > 0$$

$$\boxed{f'(x) = \frac{0.5\sqrt{2x-2}}{(\sqrt{2x-2})^2}} \leftarrow x > 0$$

$$0 = 0.5\sqrt{2x-2}$$

$$4 = \sqrt{2x}$$

$$2x = 16$$

$$x = 8 \rightarrow 4 = \sqrt{2 \cdot 8} \rightarrow 4 = 4 \rightarrow o.k.$$

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

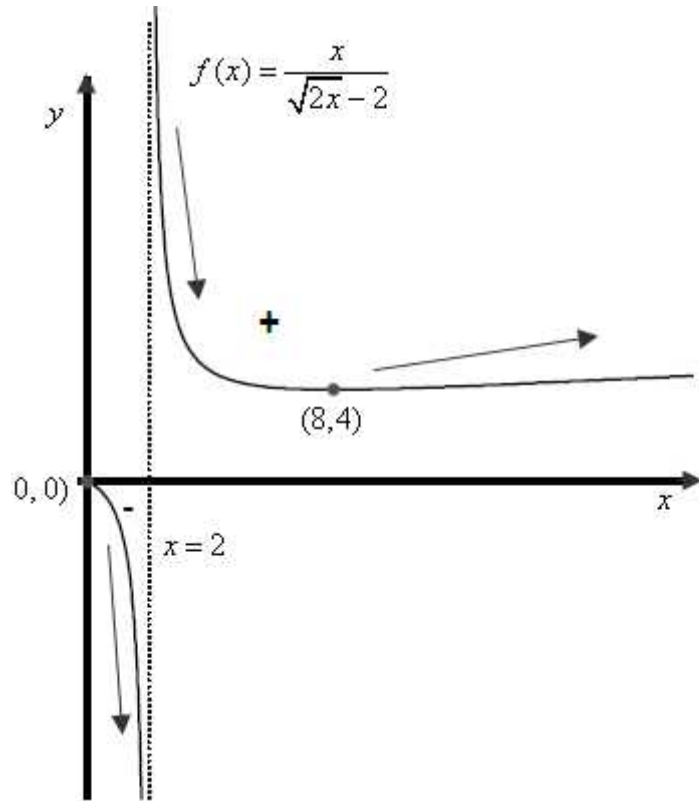
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$$f(1) = \frac{1}{\sqrt{2 \cdot 1} - 2} = -1, \quad f(7) = \frac{7}{\sqrt{2 \cdot 7} - 2} = 4.02, \quad f(9) = \frac{9}{\sqrt{2 \cdot 9} - 2} = 4.01$$

x	0	1	2	7	8	9
$f(x)$	0	-1		4.02	4	4.01
$f'(x)$						
	Max	↘		↘	Min	↗

(8,4), (0,0) :

:() (5)



$f(x)$ $g(x)$, $g'(x) = f(x) \cdot f'(x)$.
 $f(x), f'(x)$, $g'(x) < 0$ $g(x)$
 $2 < x < 8$, $f(x)$,
 $(f'(x) < 0)$, $f(x)$
 $2 < x < 8$:

$$-\frac{f}{6} \leq x \leq \frac{7f}{6} \quad f(x) = \frac{-a \cdot 16 \cos x}{\sqrt{16 \sin x + 9}}$$

$$-\frac{f}{6} \leq x \leq \frac{7f}{6}$$

$$\cos x < 0$$

$$\cos x > 0$$

$$-a < 0 \quad a > 0$$

$$\frac{f}{2} < x \leq \frac{7f}{6} \quad f(x) > 0 \quad (1)$$

$$-\frac{f}{6} \leq x < \frac{f}{2} \quad f(x) < 0 \quad (2)$$

$$\int_{-\frac{f}{6}}^{\frac{7f}{6}} \frac{-a \cdot 16 \cos x}{\sqrt{16 \sin x + 9}} dx$$

$$(16 \sin x + 9)' = 16 \cos x$$

$$\int_{-\frac{f}{6}}^{\frac{7f}{6}} \frac{-a \cdot 16 \cos x}{\sqrt{16 \sin x + 9}} dx =$$

$$\left. -2a \sqrt{16 \sin x + 9} \right|_{-\frac{f}{6}}^{\frac{7f}{6}} =$$

$$-2a \left(\sqrt{16 \sin \frac{7f}{6} + 9} - \sqrt{16 \sin(-\frac{f}{6}) + 9} \right) =$$

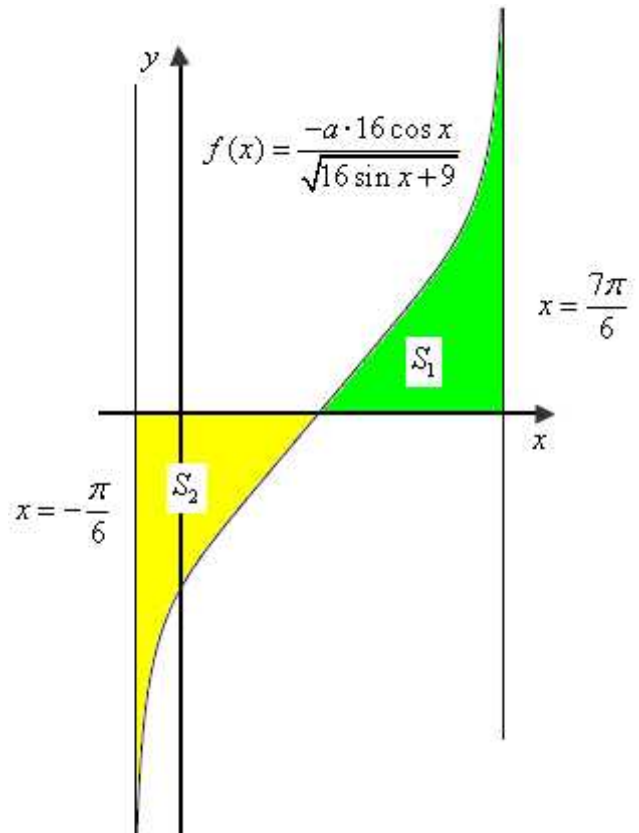
$$-2a(1-1) = 0$$

• 0

:

, $f(x)$

$$\cdot x = -\frac{f}{6}, \quad x = \frac{7f}{6} :$$



$$\cdot S_1 = S_2 \quad \cdot \int_{-\frac{f}{6}}^{\frac{7f}{6}} \frac{-a \cdot 16 \cos x}{\sqrt{16 \sin x + 9}} dx = 0$$

$$\cdot S_1 = S_2 = 4 \quad \cdot 8$$

$$S_1 = \int_{\frac{f}{2}}^{\frac{7f}{6}} \frac{-a \cdot 16 \cos x}{\sqrt{16 \sin x + 9}} dx =$$

$$S_1 = -2a \sqrt{16 \sin x + 9} \Bigg|_{\frac{f}{2}}^{\frac{7f}{6}}$$

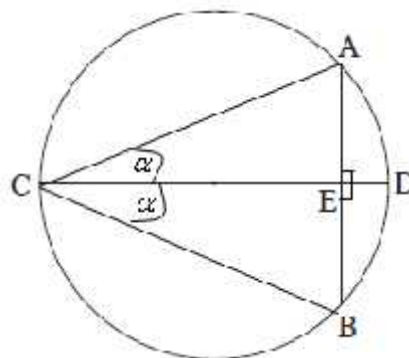
$$S_1 = -2a \left(\sqrt{16 \sin \frac{7f}{6} + 9} - \sqrt{16 \sin \left(\frac{f}{2}\right) + 9} \right)$$

$$S_1 = -2a(1-5)$$

$$S_1 = 8a$$

$$\cdot a = 0.5 \quad \cdot 8a = 4 \quad \cdot$$

$$a = 0.5 :$$



.ABC εfiεna ηγε πoιoισkη

(\widehat{AB} , AB , 2R , CD)
 .() $\angle BCD = r$ $r - \angle ACD$

AC = 2R cos r : ΔACD :

$$S(r) = 2R^2 \cos^2 r \sin 2r \leftarrow S(r) = \frac{(2R \cos r)^2 \sin 2r}{2} :$$

$$S'(r) = 2R^2 (2 \cos r (-\sin r) \sin 2r + 2 \cos^2 r \cos 2r)$$

$$S'(r) = 2R^2 (2 \cos r [-\sin r \sin 2r + \cos r \cos 2r])$$

$$S'(r) = 4R^2 \cos r \cos 3r$$

~~$$0 = \cos r \leftarrow 0 < r < 90^\circ$$~~

$$0 = \cos 3r$$

$$3r = 90^\circ + 180^\circ k$$

$$r = 30^\circ + 60^\circ k$$

$$r = 30^\circ \leftarrow 0 < r < 90^\circ$$

$$\left. \begin{aligned} S'(\frac{f}{7}) &= 4R^2 \cos \frac{f}{7} \cos 3 \cdot \frac{f}{7} = 0.8R^2 > 0 \\ S'(\frac{f}{5}) &= 4R^2 \cos \frac{f}{5} \cos 3 \cdot \frac{f}{5} = -R^2 < 0 \end{aligned} \right\} \text{max}$$

ΔABC

$$S = 2R^2 \cos^2 30^\circ \sin 60$$

$$S = 2R^2 \left(\frac{\sqrt{3}}{2}\right)^2 \frac{\sqrt{3}}{2}$$

$$S = \frac{3\sqrt{3}}{4} R^2$$

. " $\frac{3\sqrt{3}}{4} R^2$ ΔABC :

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