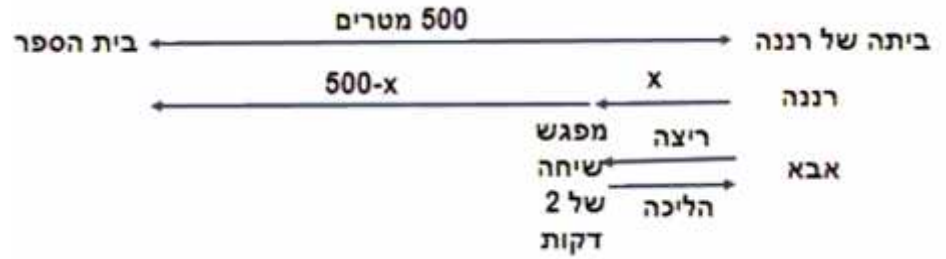


$(0 < v < 2.5, \quad) v-$

$(0 < x < 500, \quad) x-$,



()	()	()		
x	v	$\frac{x}{v}$		
x	2.5	$\frac{x}{2.5}$		
$500-x$	v	$\frac{500-x}{v}$		
x	1.5	$\frac{x}{1.5}$		

$\frac{x}{v} = \frac{x}{2.5} + 180$

, , (3) 180 ,

, (, ")

$\frac{500-x}{v} = \frac{x}{1.5} :$

$$(c > 0) \quad a_1 = -\frac{1}{c}, \quad a_{n+1} = -\frac{c^{n-2}}{a_n} \quad a_n$$

$$a_1 < 0 \quad , \quad , 2 - \quad (\quad)$$

$$a_{n+2} = -\frac{c^{n-1}}{a_{n+1}}$$

$$a_n = a_{n+2} \quad , a_{n+2} = c \cdot a^n \quad , a_{n+2} = -c^{n-1} \cdot \frac{-a^n}{c^{n-2}}$$

$$(c \quad) \quad , \quad - \quad :$$

$$a_3 = a_1 \cdot c = -\frac{1}{c} \cdot c = -1, \quad a_5 = -c, \quad a_7 = -c^2 : \quad (1)$$

$$a_6 = c^2 = a_4 = c : \quad , a_2 = -\frac{c^{1-2}}{a_1} = -\frac{1}{c} \cdot \frac{-c}{1} \rightarrow a_2 = 1 :$$

$$a_7 = -c^2, \quad a_6 = c^2, \quad a_5 = -c, \quad a_4 = c, \quad a_3 = -1, \quad a_2 = 1, \quad a_1 = -\frac{1}{c} : \quad (2)$$

$$(\quad - \quad)$$

$$-\frac{1}{c} \quad 7 \quad :$$

$$a_3 = -a_2 \quad (3)$$

$$(a_3 < 0) \quad (\quad) -$$

$$(\quad) \quad ,$$

$$S_{2n-1} = a_1 = -\frac{1}{c} : \quad , \quad ,$$

$$: a_3 = -1 = a_2 = 1 \quad , \quad ,$$

$$\left. \begin{aligned} S_{(n-1)even} &= \frac{a_2(c^{n-1}-1)}{c-1} = \frac{1 \cdot (c^{n-1}-1)}{c-1} \\ S_{(n-1)odd} &= \frac{a_3(c^{n-1}-1)}{c-1} = \frac{(-1) \cdot (c^{n-1}-1)}{c-1} \end{aligned} \right\} S_{2n-2} = \frac{1 \cdot (c^{n-1}-1)}{c-1} + \frac{(-1) \cdot (c^{n-1}-1)}{c-1} = \frac{(1-1)(c^{n-1}-1)}{c-1} = 0$$

$$S_{2n-1} = -\frac{1}{c} + 0 = -\frac{1}{c}$$

$$S_{2n-1} = -\frac{1}{c} :$$

$$b_n = -\frac{2}{a_n \cdot a_{n+1}} \quad ; \quad b_n \quad (1)$$

$$b_n = -\frac{2}{-c^{n-2}} \rightarrow b_n = \frac{2}{c^{n-2}} \quad , a_n \cdot a_{n+1} = -c^{n-2} \quad , a_{n+1} = -\frac{c^{n-2}}{a_n} \quad ; a_n$$

$$\frac{b_{n+1}}{b_n} = \frac{2}{c^{n-1}} \cdot \frac{c^{n-2}}{2} \rightarrow \frac{b_{n+1}}{b_n} = \frac{1}{c} \quad ; \quad b_{n+1} = \frac{2}{c^{n-1}}$$

$$\frac{1}{c} \quad , \quad b_n \quad ;$$

$$b_1 = -\frac{2}{a_1 \cdot a_2} = -\frac{2}{-\frac{1}{c} \cdot 1} = 2c \quad (2)$$

$$, 0 < q < 1 \quad , \quad b_n \quad -$$

$$c > 1 \quad , q = \frac{1}{c}$$

$$b_n \quad , c \quad c > 1 \quad ;$$

$$b_n \quad - \quad (3)$$

$$S = \frac{b_1}{1-q} = \frac{2c}{1-\frac{1}{c}}$$

$$S = \frac{2c}{\frac{c-1}{c}} = \frac{2c^2}{c-1}$$

$$\frac{2c^2}{c-1} \quad b_n \quad - \quad ;$$

60 ,

, k

$p(false) = 1 - p$, $p(true) = p$

100 , 60

$$P_2(2) = P_2(0)$$

$$p^2 = (1 - p)^2$$

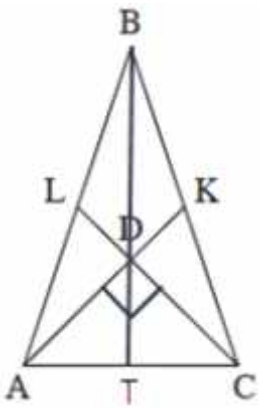
$$p = 1 - p$$

$$p = \frac{1}{2}$$

," "

$$k = 4 - 2 = 2$$

$k = 2$:



. AK ⊥ CL .3

AK, CL .2 .(AB = BC)

ΔABC .1

. ALKC

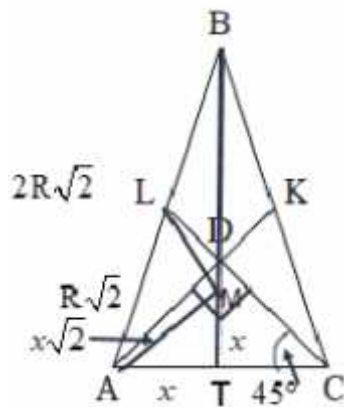
M.4 .

$$\frac{S_{BLDK}}{S_{\Delta ABC}} \cdot BD = AC \quad ; \quad "$$

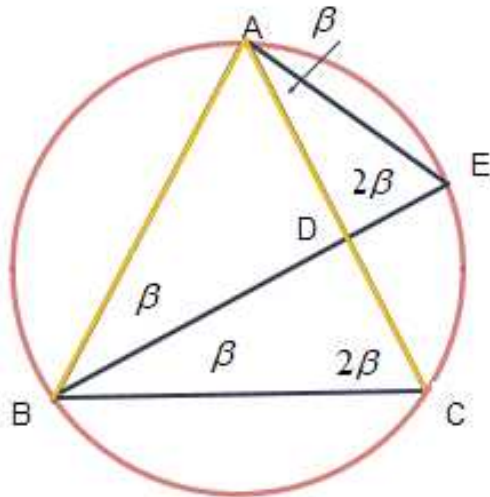
$$\cdot \frac{AM}{AD} \quad (2) \quad \sphericalangle AML = 90^\circ \quad (1) .$$

	.(AB = BC)	ΔABC	5 1
		AK, CL	6 2
		BDT	7 6
2:1		$TD = \frac{BD}{2}$	8 7,6
		AK ⊥ CL	9 3
ΔADC		$TD = \frac{AC}{2}$	10 9,7
		BD = AC	11 10,8
. . .			
(DL, DK, DT)		S - " ,	12 7,6
		$S_{\Delta ABC} = 6S, S_{BLDK} = 2S$	13 12
		$\frac{S_{BLDK}}{S_{\Delta ABC}} = \frac{1}{3}$	14 13,12
. . .			
		ALKC M	15 4
"		$\sphericalangle ATD = \sphericalangle CTD = 90^\circ$	16 7,5
ΔDTC	"	$\sphericalangle LCA = 45^\circ$	17 16,9
\widehat{AL}		$\sphericalangle AML = 90^\circ$	18 17,15
(1) . .			

	* TD	M	19
			18,7
		$AT = TD = x$	20
	ΔADT	$AD = x\sqrt{2}$	22
		$ML = MA = R$	23
			15
...			
	ΔAML	$AL = R\sqrt{2}$	24
		$AB = 2R\sqrt{2}$	25
	2:1	$BT = 3x$	26
	ΔADT	$(2R\sqrt{2})^2 = x^2 + (3x)^2$ $8R^2 = 10x^2$ $AM = R = x \frac{\sqrt{5}}{2}$	27
		$\frac{AM}{AD} = \frac{x \frac{\sqrt{5}}{2}}{x\sqrt{2}}$	28
		$\frac{AM}{AD} = \frac{\sqrt{10}}{4} \sim 0.791$	29
			28
...			



, TD M : *
 , " , $\sphericalangle MLA = \sphericalangle MAL = 45^\circ$,
 . , $\sphericalangle DLA > 45^\circ$ - , ΔLDA -



() , $\triangle ABC$ R : $\angle EAC = \angle EBC = s$, $\angle E = \angle C = 2s$

:

$\triangle ABC$

$$\frac{AB}{\sin 2s} = 2R \rightarrow \boxed{AB = 2R \sin 2s}$$

$$S_{\triangle ABC} = \frac{(2R \sin 2s)^2 \cdot \sin(180^\circ - 4s)}{2}$$

$$\boxed{S_{\triangle ABC} = 2R^2 \sin^2 2s \sin 4s}$$

$$S_{\triangle ABC} = 2R^2 \sin 2s \cdot \sin 2s \cdot \sin(180^\circ - 4s)$$

$$\boxed{S_{\triangle ABC} = 2R^2 \sin^2 2s \sin 4s}$$

:

$\triangle ABE$

$$\frac{AE}{\sin s} = 2R \rightarrow \boxed{AE = 2R \sin s}$$

$$S_{\triangle ADE} = \frac{(2R \sin s)^2 \cdot \sin s \cdot \sin 2s}{2 \sin(180^\circ - 3s)}$$

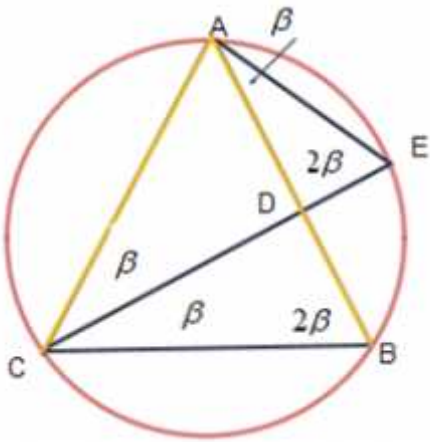
$$\boxed{S_{\triangle ADE} = \frac{2R^2 \sin^3 s \cdot \sin 2s}{\sin 3s}}$$

$$\frac{S_{\triangle ABC}}{S_{\triangle ADE}} = 2R^2 \sin^2 2s \cdot \sin 4s \cdot \frac{\sin 3s}{2R^2 \sin^3 s \cdot \sin 2s}$$

$$\boxed{\frac{S_{\triangle ABC}}{S_{\triangle ADE}} = \frac{\sin 2s \cdot \sin 3s \cdot \sin 4s}{\sin^3 s}}$$

$$\frac{S_{\triangle ABC}}{S_{\triangle ADE}} = \frac{\sin 2s \cdot \sin 3s \cdot \sin 4s}{\sin^3 s} :$$

$$BE = R$$



ΔABE

$$\frac{BE}{\sin(180^\circ - 3s)} = 2R$$

$$\frac{R}{2R} = \sin 3s$$

$$3s = 30^\circ + 360^\circ k \quad 3s = 150^\circ + 360^\circ k$$

$$\boxed{s = 10^\circ} \quad \cancel{s = 50^\circ}$$

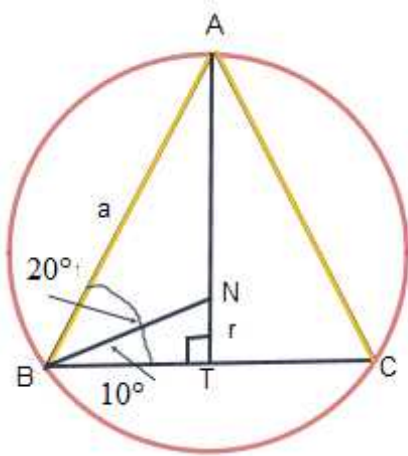
ΔABC

$$\frac{S_{\Delta ABC}}{S_{\Delta ADE}} = \frac{\sin 20^\circ \cdot \sin 30^\circ \cdot \sin 40^\circ}{\sin^3 10^\circ}$$

$$\boxed{\frac{S_{\Delta ABC}}{S_{\Delta ADE}} = 20.99}$$

$$\frac{S_{\Delta ABC}}{S_{\Delta ADE}} = 20.99 :$$

ΔABC



$$AB = a$$

ΔABT

$$\cos 20^\circ = \frac{BT}{AB}$$

$$\boxed{a \cos 20^\circ = BT}$$

ΔBNT

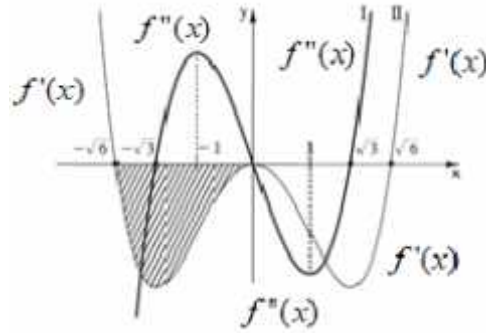
$$\tan 10^\circ = \frac{NT(r)}{BT}$$

$$a \cos 20^\circ \tan 10^\circ$$

$$\boxed{r = 0.166a}$$

$$.0.166a \quad \Delta ABC \quad -$$

:



$(f'(x))$, $(f''(x))$

II , $f(x)$ I

.II , $x < \sqrt{3}$, $-\sqrt{3} < x < 0$ - I

.II , $0 < x < \sqrt{3}$, $x < -\sqrt{3}$ - I

. $f'(x)$ - II , $f''(x)$ - I :

$f(x)$, $f'(x)$, (1)

$x = -\sqrt{6}$, $f(x)$ - , $f'(x)$, $x = -\sqrt{6}$

$x = \sqrt{6}$, $f(x)$ - , $f'(x)$, $x = \sqrt{6}$

$f(x)$ - :

$f(x)$, $f''(x)$ (2)

x - , $f''(x)$, $x = -\sqrt{3}$, $x = 0$, $x = \sqrt{3}$

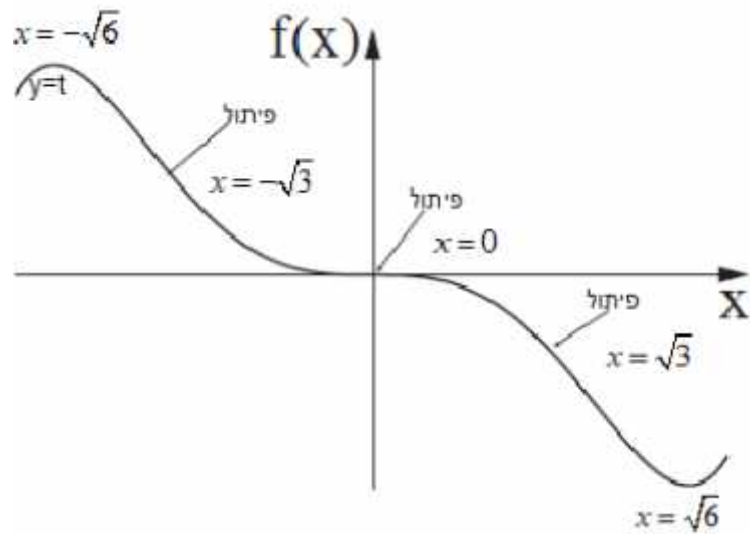
$f(x)$ - :

$f''(x)$ $f'(x)$ -

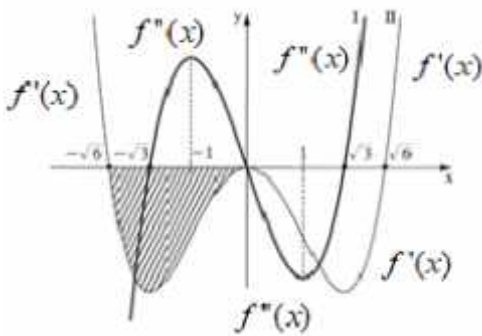
$x = 1$, $-\sqrt{3} \leq x < \sqrt{3}$, $f''(x)$

$f'(x)$ $x = 1$:

$x = -\sqrt{6}$, $f'(x) = 0$, $y = 1$
 $-\sqrt{3} < x < 0$, $x > \sqrt{3}$, $f''(x) < 0$ (Concave down)
 $x < -\sqrt{3}$, $0 < x < \sqrt{3}$, $f''(x) > 0$ (Concave up)



(), $f(-\sqrt{3}) = t$
 $f'(x) = 0$



$$\begin{aligned}
 S &= \int_{-\sqrt{6}}^0 (0 - f'(x)) dx \\
 S &= -f(x) \Big|_{-\sqrt{6}}^0 \\
 S &= f(0) - (-f(-\sqrt{6})) \\
 S &= 0 - (-t) \\
 \boxed{S = t}
 \end{aligned}$$

$f(x) = ax^5 + bx^3 + c$, $c = 0$, b, a

$$f(x) = ax^5 + bx^3 + c$$

$$f'(x) = 5ax^4 + 3bx^2, f(x) = ax^5 + bx^3 :$$

$$f'(\sqrt{6}) = 0$$

$$\begin{aligned}
 0 &= 5a\sqrt{6}^4 + 3b\sqrt{6}^2 \\
 0 &= 180a + 18b
 \end{aligned}$$

$$\boxed{\frac{a}{b} = -\frac{1}{10}}$$

$$\frac{a}{b} = -\frac{1}{10}, c = 0 :$$

$f(x) = \sin\left(\frac{f}{x}\right) :$

$x \neq 0 :$

$x \geq \frac{2}{7}$

$f(x) = 0$

$\sin\left(\frac{f}{x}\right) = 0$

$\frac{f}{x} = f k \quad /: f$

$x = \frac{1}{k}$

$(k > 0, \text{ natural }) \quad x \geq \frac{2}{7} = 0.286 - (0$

$k = 4$	$k = 3$	$k = 2$	$k = 1$	k
$x = \frac{1}{4} = 0.25 < 0.286$	$x = \frac{1}{3}$	$x = \frac{1}{2}$	$x = 1$	$x = \frac{1}{k}$

$\left(\frac{1}{3}, 0\right), \left(\frac{1}{2}, 0\right), (1, 0) :$

$$f'(x) = 0$$

$$\left(\frac{2}{7}, -1\right)$$

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

$$\cos\left(\frac{f}{x}\right) = 0$$

$$\frac{f}{x} = \frac{f}{2} + fk \quad /: f$$

$$\frac{1}{x} = \frac{1}{2} + k \quad / \cdot 2x$$

$$2 = x + 2kx$$

$$2 = x(1 + 2k)$$

$$\boxed{x = \frac{2}{1 + 2k}}$$

$$\left(\quad \right) \sin\left(\frac{f}{x}\right) = \pm 1 \quad \cos\left(\frac{f}{x}\right) = 0 \quad ,$$

$$\left(x \geq \frac{2}{7} \quad k < 0 \quad \right) \cdot k \geq 0 \quad ,$$

$k = 3$	$k = 2$	$k = 1$	$k = 0$	k
$x = \frac{2}{1 + 2 \cdot 3} = \frac{2}{7}$	$x = \frac{2}{1 + 2 \cdot 2} = \frac{2}{5}$	$x = \frac{2}{1 + 2 \cdot 1} = \frac{2}{3}$	$x = \frac{2}{1 + 2 \cdot 0} = 2$	$x = \frac{2}{1 + 2k}$
-1	1	-1	1	$\sin\left(\frac{f}{x}\right)$

$$f(3) = \sin\left(\frac{f}{3}\right) = 0.5 \quad , \quad x > 2 \quad , \quad (2, 1)$$

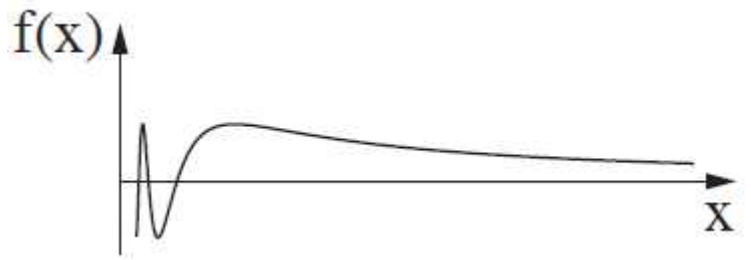
$$\left(\frac{2}{7}, -1\right) , \quad \left(\frac{2}{5}, 1\right) , \quad \left(\frac{2}{3}, -1\right) , \quad (2, 1) :$$

$$x > 2 \quad ,$$

$$\sin\left(\frac{f}{x}\right) \rightarrow 0 \quad , \quad \frac{f}{x}$$

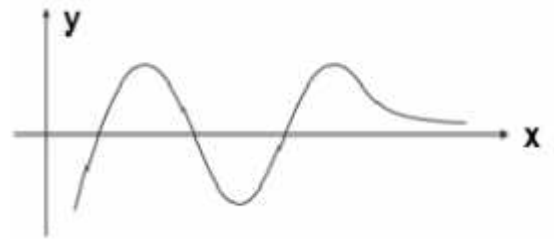
$$y = 0 \quad :$$

$$x \geq \frac{2}{7}$$



$$x = \frac{2}{7}$$

$$x = \frac{2}{7}$$



$$, x = 0$$

$$.1, \frac{1}{2}, \frac{1}{3}, \frac{1}{4} \dots :$$

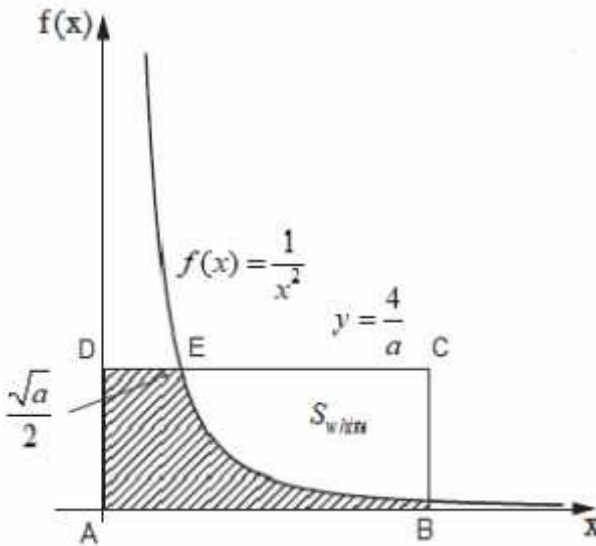
$$\frac{1}{k} - \frac{1}{k+1} = \frac{k+1-k}{k(k+1)} = \frac{1}{k(k+1)} \rightarrow 0$$

. i :

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18

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



AB = a

$$y = \frac{4}{a} \quad \text{CD} \quad \text{AD} = \frac{4}{a}$$

$$y = \frac{4}{a} \quad \text{E}$$

$$\frac{4}{a} = \frac{1}{x^2}$$

$$x^2 = \frac{a}{4}$$

$$x = \frac{\sqrt{a}}{2} \leftarrow x_E > 0$$

$$S_{white} = \int_{\frac{\sqrt{a}}{2}}^a \left(\frac{4}{a} - \frac{1}{x^2} \right) dx$$

$$S_{white} = \left[\frac{4}{a}x + \frac{1}{x} \right]_{\frac{\sqrt{a}}{2}}^a$$

$$x = a : \frac{4}{a} \cdot a + \frac{1}{a} = 4 + \frac{1}{a}$$

$$x = \frac{\sqrt{a}}{2} : \frac{4}{a} \cdot \frac{\sqrt{a}}{2} + \frac{1}{\frac{\sqrt{a}}{2}} = \frac{2}{\sqrt{a}} + \frac{2}{\sqrt{a}} = \frac{4}{\sqrt{a}}$$

$$S_{white} = 4 + \frac{1}{a} - \frac{4}{\sqrt{a}}$$

$$S_{passim} = 4 - \left(4 + \frac{1}{a} - \frac{4}{\sqrt{a}} \right)$$

$$S_{passim} = \frac{4}{\sqrt{a}} - \frac{1}{a}$$

$$S_{passim} = \frac{4}{\sqrt{a}} - \frac{1}{a}$$

$$\cdot S_{passim} = \frac{4}{\sqrt{a}} - \frac{1}{a} \quad \text{DIN'J'N}$$

$$\cdot a \geq \frac{1}{4}$$

$$\cdot S(0.25) = \frac{4}{\sqrt{0.25}} - \frac{1}{0.25} = 4 :$$

$$S_{passim} = \frac{4}{\sqrt{a}} - \frac{1}{a}$$

$$S' = \frac{4}{a} \cdot \frac{-1}{2\sqrt{a}} - \frac{-1}{a^2}$$

$$S' = \frac{-2}{a\sqrt{a}} + \frac{1}{a^2}$$

$$\boxed{S' = \frac{-2\sqrt{a} + 1}{a^2}}$$

$$-2\sqrt{a} + 1 = 0$$

$$\sqrt{a} = \frac{1}{2}$$

$$\boxed{a = \frac{1}{4}}$$

$$\cdot S(1) = \frac{4}{\sqrt{1}} - \frac{1}{1} = 3 :$$

$$\cdot a = \frac{1}{4}$$

$$\cdot a = \frac{1}{4} :$$