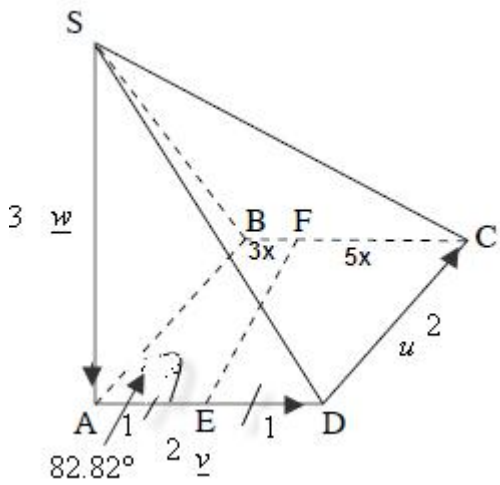


.SABCD



$$\begin{aligned} \overline{AB} = \underline{u} & \quad |\underline{u}| = 2 \quad \underline{u}^2 = 4 \\ \overline{AD} = \underline{v} & \quad |\underline{v}| = 2 \quad \underline{v}^2 = 4 \\ \overline{AA'} = \underline{w} & \quad |\underline{w}| = 3 \quad \underline{w}^2 = 9 \\ \underline{u} \cdot \underline{w} = \underline{v} \cdot \underline{w} = 0, & \quad \underline{u} \cdot \underline{v} = \frac{1}{2} \end{aligned}$$

,BC F  
: ,BF:FC = 3:5

$$\overline{BF} = \frac{3}{8} \overline{BC} \rightarrow \overline{BF} = \frac{3}{8} \underline{v}$$

: AD E

$$\overline{AE} = \frac{1}{2} \overline{AD}$$

$$\overline{AE} = \frac{1}{2} \underline{v}$$

$$\underline{u} \cdot \underline{w} = \underline{v} \cdot \underline{w} = 0 : , \overline{SA}$$

$$\overline{SD} \cdot \overline{EF} = 0 : , \overline{SD} \perp \overline{EF}$$

$$\overline{SD} = \overline{SA} + \overline{AD} \rightarrow \overline{SD} = \underline{w} + \underline{v}$$

$$\overline{EF} = \overline{EA} + \overline{AB} + \overline{BF}$$

$$\overline{EF} = -\frac{1}{2} \underline{v} + \underline{u} + \frac{3}{8} \underline{v}$$

$$\overline{EF} = \underline{u} - \frac{1}{8} \underline{v}$$

$$\overline{SD} \cdot \overline{EF} = 0$$

$$\left(u - \frac{1}{8}v\right)(w + v) = 0$$

$$uv - \frac{1}{8}v^2 = 0 \quad \leftarrow u \cdot w = v \cdot w = 0$$

$$\boxed{uv = \frac{1}{2}} \quad \leftarrow v^2 = 4$$

$$uv = |u||v| \cos \angle BAD$$

$$\frac{1}{2} = 2 \cdot 2 \cos \angle BAD$$

$$\cos \angle BAD = \frac{1}{8} \rightarrow \boxed{\angle BAD = 82.82^\circ}$$

: SABCD

$$S_{ABCD} = |u||v| \sin \angle BAD$$

$$S_{ABCD} = 2 \cdot 2 \sin 82.82^\circ$$

$$\boxed{S_{ABCD} = 3.97}$$

: SABCD

$$V_{SABCD} = \frac{S_{ABCD} \cdot |w|}{3}$$

$$V_{SABCD} = \frac{3.97 \cdot 3}{3}$$

$$\boxed{V_{SABCD} = 3.97}$$

. " 3.97 SABCD :  
 .SEDC (1) .

$S_{EDC} = \frac{1}{4} S_{ABCD}$  : ,AD E  
 .SABCD SEDC SA

$$V_{SEDC} = \frac{1}{4} V_{SABCD}$$

$$V_{SEDC} = \frac{3.97}{4}$$

$$\boxed{V_{SEDC} = 0.992}$$

. " 0.992 SEDC :  
 C , C (2)  
 .SEDC SED

"

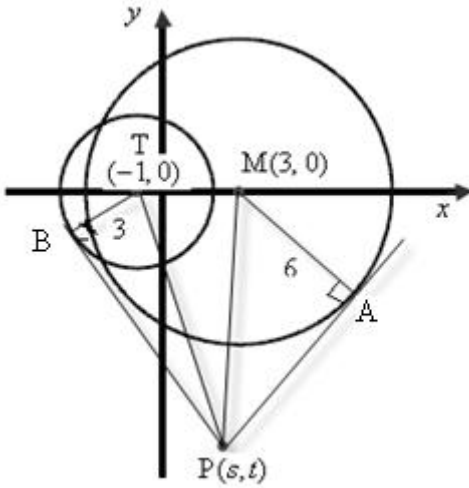
. " 0.992 SEDC

$$S_{\text{SED}} = \frac{|w| |\overline{\text{ED}}|}{2} = \frac{3 \cdot 1}{2} = 1.5 : \text{SAD}$$

$$0.992 = \frac{1.5 h_C}{3}$$

$$\boxed{1.984 = h_C}$$

.1.984 SED C :

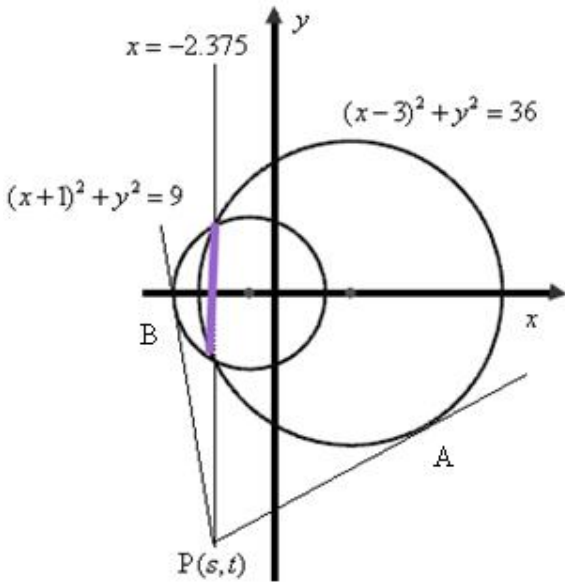


$$\begin{aligned}
 x^2 + y^2 - 6x - 27 &= 0 \\
 (x-3)^2 + y^2 - 27 &= 9 \\
 (x-3)^2 + y^2 &= 36 \rightarrow M(3, 0), R = 6 \\
 x^2 + y^2 + 2x - 8 &= 0 \\
 (x+1)^2 + y^2 - 8 &= 1 \\
 (x+1)^2 + y^2 &= 9 \rightarrow T(-1, 0), R = 3
 \end{aligned}$$

, P(s, t)

AB, BP

. AP = BP



$$\begin{aligned}
 \sqrt{(s-3)^2 + (t-0)^2} - 6 &= \sqrt{(s+1)^2 + (t-0)^2} - 3 \\
 s^2 - 6s + 9 + t^2 - 36 &= s^2 + 2s + 1 + t^2 - 9 \\
 -8s &= 19 \\
 s &= -2.375 \\
 \boxed{x = -2.375}
 \end{aligned}$$

x = -2.375

$$\begin{cases}
 \text{I. } x^2 + y^2 - 6x - 27 = 0 \\
 \text{II. } x^2 + y^2 + 2x - 8 = 0
 \end{cases}
 \left. \begin{array}{l} \\ \\ \end{array} \right\} -8x - 19 = 0 \rightarrow x = -2.375$$

. x = -2.375

(-2.375, y) y

x = 2.375 -2.666 ≤ y ≤ 2.666

$$\begin{aligned}
 (-2.375 - 3)^2 + y^2 &= 36 \\
 y^2 &= 7.109
 \end{aligned}$$

x = 2.375 -2.666 ≤ y ≤ 2.666

. 2 · 2.666 = 5.333

. 5.333

$$z = a + bi \quad z + \frac{1}{z} = 1 \quad z_2 = z_1$$

$$z + \frac{1}{z} = 1 \rightarrow z^2 + 1 = z$$

$$z^2 - z + 1 = 0$$

$$z_{1,2} = \frac{1 \pm i\sqrt{3}}{2}$$

$$z_1 = \frac{1}{2} + \frac{\sqrt{3}}{2}i \leftarrow 1st \text{ quadrant}$$

$$z_2 = \frac{1}{2} - \frac{\sqrt{3}}{2}i$$

$$z_3 = z_2 \cdot z_1$$

$$z_3 = \frac{1}{2} - \frac{3}{2}\sqrt{3}i : \quad d = -\sqrt{3}i$$

$$x^2 + y^2 = 1$$

$$z_3 = r = \left| \frac{1}{2} - \frac{3}{2}\sqrt{3}i \right| = \sqrt{\frac{1}{4} + \frac{27}{4}} = \sqrt{7} > 1$$

$$z_3 :$$

( )

$$z^2 + az + b = 0$$

$$b = a \quad (1)$$

$$z_1 \cdot z_2 = b, \quad z_1 + z_2 = -a :$$

$$z_1 = x + yi, \quad z_2 = s + ti \quad (y, t \neq 0) :$$

$$x + yi + s + ti = -a \rightarrow I: \quad y + t = 0 \rightarrow \boxed{y = -t}$$

$$(x + yi) \cdot (s + ti) = b \rightarrow xs + xti + syi - yt = b \rightarrow I: \quad xt + sy = 0$$

$$xt - st = 0 \rightarrow \boxed{x = s}$$

$$:$$

$$z_3 = \frac{1}{2} - \frac{3}{2}\sqrt{3}i \quad (2)$$

$$\frac{1}{2} + \frac{3}{2}\sqrt{3}i : \quad (1)$$

$$\frac{1}{2} + \frac{3\sqrt{3}i}{2} + \frac{1}{2} - \frac{3\sqrt{3}i}{2} = a \quad a=1$$

$$\left(\frac{1}{2} + \frac{3\sqrt{3}i}{2}\right)\left(\frac{1}{2} - \frac{3\sqrt{3}i}{2}\right) = b \quad \rightarrow b = \frac{1}{4} + \frac{27}{4} = 7$$

$$.b=7 , a=1 :$$

$$x, a > 0, f(x) = \frac{a}{2}(e^{\frac{x}{a}} + e^{-\frac{x}{a}})$$

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

$$f'(x) = \frac{a}{2} \left( \frac{1}{a} \cdot e^{\frac{x}{a}} - \frac{1}{a} \cdot e^{-\frac{x}{a}} \right)$$

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

$$0 = e^{\frac{x}{a}} - e^{-\frac{x}{a}} \rightarrow e^{\frac{x}{a}} = e^{-\frac{x}{a}} \rightarrow \frac{x}{a} = -\frac{x}{a}$$

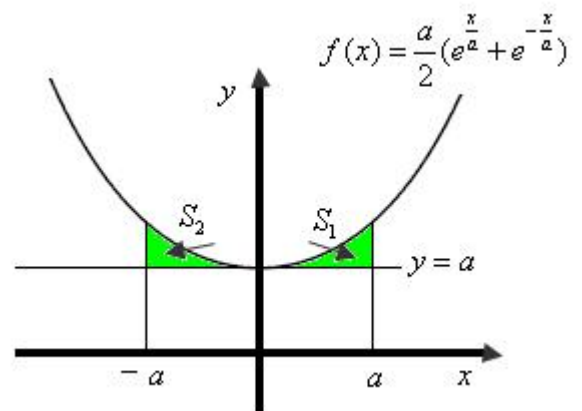
$$x = 0 \rightarrow f(0) = \frac{a}{2}(e^{\frac{0}{a}} + e^{-\frac{0}{a}}) = a \rightarrow (0, a)$$

$$f''(x) = \frac{1}{2a}(e^{\frac{x}{a}} + e^{-\frac{x}{a}}) > 0$$

$(0, a)$   $x$

$(0, a)$  :

$(-a, a)$



$$y = a$$

$$V_1 = f \int_0^a \left( \frac{a}{2} (e^{\frac{x}{a}} + e^{-\frac{x}{a}}) \right)^2 dx - f \int_0^a a^2 dx$$

$$V_1 = f \int_0^a \frac{a^2}{4} (e^{\frac{2x}{a}} + 2 + e^{-\frac{2x}{a}}) dx - f \int_0^a a^2 dx$$

$$V_1 = f \left[ \frac{a^2}{4} \left( \frac{a}{2} e^{\frac{2x}{a}} + 2x - \frac{a}{2} e^{-\frac{2x}{a}} \right) - f a^2 x \right]_0^a$$

$$V_1 = f \left( \left( \frac{a^2}{4} \left( \frac{a}{2} e^{\frac{2a}{a}} + 2a - \frac{a}{2} e^{-\frac{2a}{a}} \right) - \frac{a^2}{4} \left( \frac{a}{2} e^{\frac{2 \cdot 0}{a}} + 2 \cdot 0 - \frac{a}{2} e^{-\frac{2 \cdot 0}{a}} \right) \right) - (a^2 \cdot a - 0) \right)$$

$$V_1 = f \left( \left( \frac{a^3}{8} e^2 + \frac{a^3}{2} - \frac{a^3}{8} e^{-2} - a^3 \right) \right)$$

$$V_1 = f \left( \left( \frac{a^3}{8} e^2 - \frac{a^3}{2} - \frac{a^3}{8} e^{-2} \right) \right)$$

$$= 2f \left( \frac{a^3}{8} e^2 - \frac{a^3}{2} - \frac{a^3}{8} e^{-2} \right)$$

$$2f \left( \frac{a^3}{8} e^2 - \frac{a^3}{2} - \frac{a^3}{8} e^{-2} \right) = 2f (e^2 - e^{-2} - 4) :$$

$$2f \left( \frac{a^3}{8} e^2 - \frac{a^3}{2} - \frac{a^3}{8} e^{-2} \right) = 2f (e^2 - e^{-2} - 4) \quad / : 2f$$

$$\frac{a^3}{8} e^2 - \frac{a^3}{2} - \frac{a^3}{8} e^{-2} = e^2 - e^{-2} - 4$$

$$\frac{a^3}{8} (e^2 - 4 - e^{-2}) = e^2 - e^{-2} - 4 \quad / : e^2 - e^{-2} - 4 \neq 0$$

$$\frac{a^3}{8} = 1$$

$$a^3 = 8$$

$$\boxed{a = 2}$$

$$a = 2 :$$

$$b < 0, \quad g(x) = \frac{b}{2} (e^{\frac{x}{b}} + e^{-\frac{x}{b}})$$

$$, b = -a = -2 -$$

$$. b = -2 :$$



$$f(x) = \frac{\log\left(\frac{x}{4}\right)}{\log(x-3)} - 2$$

$$\frac{\log\left(\frac{x}{4}\right)}{\log(x-3)} - 2 = 0$$

log -

$$x > 3$$

$$x = 4$$

$x > 3, x \neq 4$  :

$$\frac{\log\left(\frac{x}{4}\right)}{\log(x-3)} - 2 = 0$$

$$\frac{\log\left(\frac{x}{4}\right)}{\log(x-3)} = 2$$

$$\log\left(\frac{x}{4}\right) = 2\log(x-3)$$

$$\log\left(\frac{x}{4}\right) = \log(x-3)^2 \quad \leftarrow b \log_a x = \log_a x^b$$

$$\frac{x}{4} = (x-3)^2$$

$$\frac{x}{4} = x^2 - 6x + 9$$

$$x = 4x^2 - 24x + 36$$

$$4x^2 - 25x + 36 = 0$$

$$x_{1,2} = \frac{25 \pm 7}{8}$$

$$\boxed{x=4}$$

$$\boxed{x=2.25}$$

$x$  -

$$f(x) = \frac{\log\left(\frac{x}{4}\right)}{\log(x-3)} - 2$$

:

$a > 1, \frac{f}{12} \leq x \leq \frac{5f}{12}$

$f(x) = \log_a(\sin 2x) + b$

$\log_a(\sin 2x) + b$

sin -

$\frac{f}{12} \leq x \leq \frac{5f}{12}$

.1

, 0

:

$\log_a(\sin 2 \cdot \frac{f}{12}) + b = b + \log_a 0.5$

$\log_a(\sin 2 \cdot \frac{5f}{12}) + b = b + \log_a 0.5$

sin 2x

sin 2x

f(x) -

a > 1

$f(x) = \log_b(\sin 2x) + b$

$\sin 2x = \sin \frac{f}{2} = 1$

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

1

sin 2x

$\log_b(\sin 2 \cdot \frac{f}{4}) + b = \log_b 1 + b = b$

$f(x) = \log_b(\sin 2x) + b$

$b = 1$

, 0

:

$0 = 1 + \log_a 0.5$

$\log_a 0.5 = -1$

$a^{-1} = 0.5$

$a^{-1} = 2^{-1}$

$a = 2$

$b = 1, a = 2$