

$$AB = \sqrt{(8-5)^2 + (7-3)^2} = \sqrt{25} = 5$$

$$13 = 5h_{AB} \rightarrow h_{AB} = 2.6$$

$$m_{AB} = \frac{8-5}{7-3} = 0.75$$

$$AB \equiv y - 8 = 0.75(x - 7)$$

$$AB \equiv -0.75x + y - 2.75$$

$$2.6 = \frac{c_{CD} + 2.75}{\sqrt{(-0.75)^2 + 1^2}}$$

$$c_{CD} = 0.5$$

$$CD \equiv -0.75x + y + 0.5 = 0$$

$$CD \equiv -0.75x + y + 0.5 = 0 :$$

$$5 = \frac{-0.75 \cdot 5 + y + 0.5}{\sqrt{(-0.75)^2 + 1^2}}$$

$$-6.25 = -3.25 + y$$

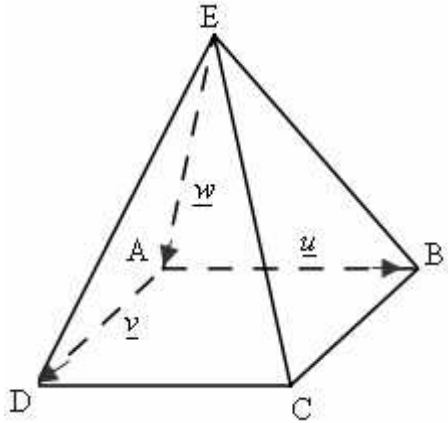
$$y = -3$$

$$y = -3$$

$$E(0, -3)$$

$$M(5, -3)$$

$$(0, -3) :$$



$$\overline{AB} = \underline{u}, \quad \overline{AD} = \underline{v}, \quad \overline{EA} = \underline{w} \quad .$$

$$\overline{EA} \cdot \overline{EC} = 0 \quad \overline{EA} \perp \overline{EC}$$

$$\overline{EA} \cdot \overline{EC} = 0 \rightarrow \overline{EA} \cdot (\overline{EA} + \overline{AB} + \overline{BC}) = 0 \rightarrow \underline{w} \cdot (\underline{w} + \underline{u} + \underline{v}) = 0$$

$$\underline{u} \cdot \underline{v} = 0 \quad \text{ABCD}$$

$$\overline{ED} \cdot \overline{EB} = 0 \quad , \overline{ED} \perp \overline{EB}$$

$$\overline{ED} \cdot \overline{EB} = (\overline{EA} + \overline{AD}) \cdot (\overline{EC} + \overline{CB})$$

$$\Leftrightarrow \overline{ED} \cdot \overline{EB} = (\underline{w} + \underline{v}) \cdot (\underline{w} + \underline{u} + \cancel{\underline{v}} + \cancel{\underline{v}})$$

$$\Leftrightarrow \overline{ED} \cdot \overline{EB} = \underline{w}\underline{w} + \underline{w}\underline{u} + \underline{v}\underline{w} + \underline{v}\underline{u}$$

$$\Leftrightarrow \overline{ED} \cdot \overline{EB} = \underline{w} \cdot (\underline{w} + \underline{u} + \underline{v}) = 0$$

$$\overline{ED} \cdot \overline{EB} = 0 :$$

ABCD

,ABCDE

ABCD

$$\overline{CB} \cdot \overline{CD} = 0 \quad , \overline{CB} \perp \overline{CD}$$

$$\overline{EB} \cdot \overline{ED} = 0 \quad \overline{EB} \perp \overline{ED}$$

$$\overline{EB} \cdot \overline{ED} = 0 \rightarrow (\underline{w} + \underline{u}) \cdot (\underline{w} + \underline{v}) = 0$$

$$\underline{w} \cdot (\underline{w} + \underline{u} + \underline{v}) = 0$$

$$\begin{cases} (\underline{w} + \underline{u}) \cdot (\underline{w} + \underline{v}) = 0 \\ \underline{w} \cdot (\underline{w} + \underline{u} + \underline{v}) = 0 \end{cases}$$

$$\begin{cases} \underline{w}\underline{w} + \underline{w}\underline{v} + \underline{u}\underline{w} + \underline{u}\underline{v} = 0 \\ \underline{w}\underline{w} + \underline{w}\underline{u} + \underline{w}\underline{v} = 0 \end{cases}$$

$$\boxed{\underline{u}\underline{v} = 0}$$

ABCD

$\overline{CB} \perp \overline{CD}$

$$z = x + yi \quad , \quad |z - \bar{z} + i| = |3z + \bar{z} - i| \quad :$$

$$|z - \bar{z} + i| = |3z + \bar{z} - i|$$

$$|x + yi - (x - yi) + i| = |3(x + yi) + x - yi - i|$$

$$|x + yi - x + yi + i| = |3x + 3yi + x - yi - i|$$

$$|(2y + 1)i| = |4x + (2y - 1)i|$$

$$\sqrt{(2y + 1)^2} = \sqrt{16x^2 + (2y - 1)^2}$$

$$4y^2 + 4y + 1 = 16x^2 + 4y^2 - 4y + 1$$

$$8y = 16x^2$$

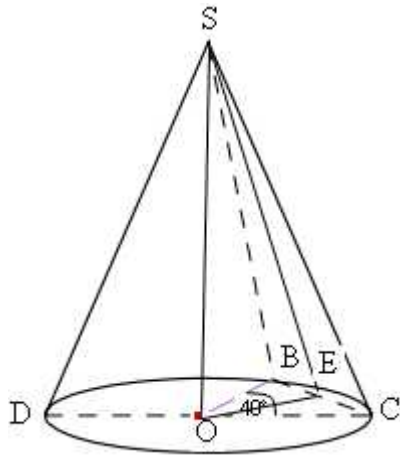
$$\boxed{y = 2x^2}$$

• , (0, 0)

•  $y = 0$

$x =$

$y = 0 :$

 $\angle SEO$ 

, ( "

)  $\Delta SBC$  - BC

SBC

- SE

.  $\Delta OBC$  "

- OE

, E

"

.  $OE = x$  $\Delta SEO$ 

$$\tan \angle SEO = \frac{SO}{EO}$$

$$x \tan 55^\circ = SO$$

$$\boxed{SO = 1.428x}$$

$$\angle EOC = \frac{\angle BOC}{2} = \frac{40^\circ}{2} = 20^\circ$$

 $\Delta EOC$ 

$$\cos \angle EOC = \frac{OE}{OC}$$

$$OC = \frac{x}{\cos 20^\circ}$$

$$\boxed{OC = 1.064x}$$

 $\Delta SOC$ 

$$\tan \angle OSC = \frac{OC}{OS}$$

$$\tan \angle OSC = \frac{1.064x}{1.428x}$$

$$\boxed{\angle OSC = 36.69^\circ}$$

$$\angle DSC = 2 \cdot \angle OSC = 2 \cdot 36.69^\circ = 73.37^\circ$$

.  $73.37^\circ$  DSC

:

$$M_t = M_0 \cdot q^t$$

$$.t \quad .q \quad ( \quad )$$

$$. \quad t \quad - M_t , \quad - M_0$$

$$.II \quad 100 - I \quad 100 \quad 8^{00}$$

$$.II \quad 64 - I \quad 80$$

$$, q_I = 0.8, q_{II} = 0.64 : ,$$

$$. \quad , \quad I$$

$$100 \cdot 0.8^t - 100 \cdot 0.64^t = 25 :$$

$$100 \cdot 0.64^t - 100 \cdot 0.8^t + 25 = 0$$

$$4 \cdot 0.64^t - 4 \cdot 0.8^t + 1 = 0$$

$$(2 \cdot 0.8^t - 1)^2 = 0$$

$$2 \cdot 0.8^t - 1 = 0$$

$$2 \cdot 0.8^t = 1$$

$$0.8^t = 0.5$$

$$\ln 0.8^t = \ln 0.5$$

$$t \ln 0.8 = \ln 0.5$$

$$\Leftrightarrow t = \frac{\ln 0.5}{\ln 0.8}$$

$$\Leftrightarrow \boxed{t \approx 3.106}$$

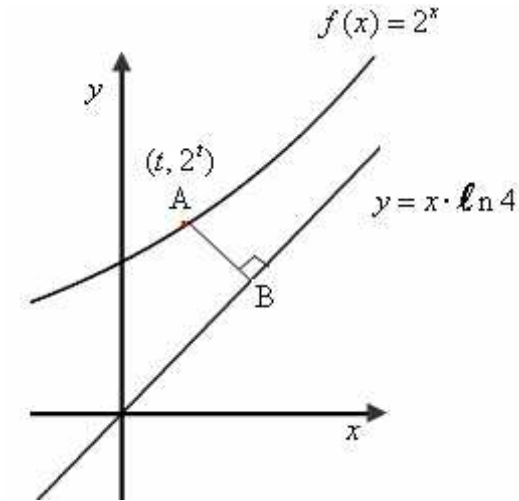
$$25 \quad , \quad 1.55 \quad , \quad 3.106$$

$$. \quad 25 \quad 1.55 \quad :$$

.x

$$y = x \cdot \ln 4$$

$$-x \cdot \ln 4 + y = 0, y = x \cdot \ln 4$$



$$, f(x) = 2^x$$

$$A(t, 2^t)$$

**הארכת** **לאינכות**

AB ,

$$AB = \frac{-t \cdot \ln 4 + 2^t}{\sqrt{(-\ln 4)^2 + 1}}$$

$$AB = \frac{-t \cdot \ln 4 + 2^t}{\sqrt{1 + \ln^2 4}}$$

$$(AB)' = \frac{-\ln 4 + 2^t \ln 2}{\sqrt{1 + \ln^2 4}}$$

$$0 = \frac{-\ln 4 + 2^t \ln 2}{\sqrt{1 + \ln^2 4}}$$

$$2^t \ln 2 = \ln 4$$

$$2^t = \frac{\ln 2^2}{\ln 2}$$

$$2^t = \frac{2 \ln 2}{\ln 2}$$

$$t = 1 \rightarrow x_A = 1 \rightarrow y_A = 2^1 = 2$$

$$(AB)'' = \frac{2^t \ln^2 2}{\sqrt{1 + \ln^2 4}} > 0 \rightarrow \text{Min}$$

$$\boxed{A(1, 2)}$$

$$y = x \cdot \ln 4$$

$$, f(x) = 2^x$$

, (1, 2) :

$$g(x) = -\frac{\ln(ax)}{x}$$

$$a > 1, f(x) = \frac{\ln(ax)}{x}$$

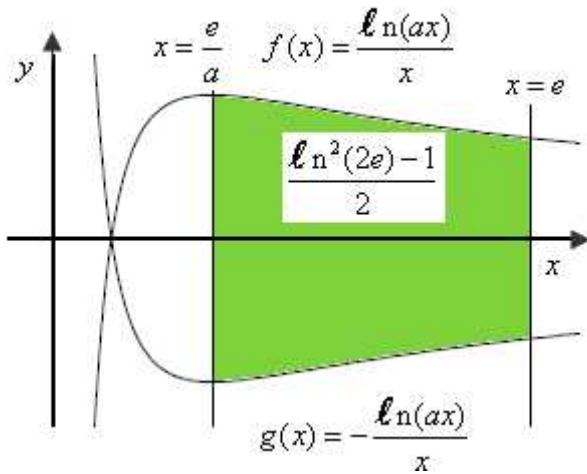
$$f'(x) = \frac{ax - \ln(ax)}{x^2}$$

$$f'(x) = \frac{1 - \ln(ax)}{x^2}$$

$$0 = 1 - \ln(ax) \rightarrow \ln(ax) = 1 \rightarrow ax = e \rightarrow x = \frac{e}{a}$$

$$f'\left(\frac{0.5e}{a}\right) = 1 - \ln(0.5e) = -\ln 0.5 > 0, f'\left(\frac{2e}{a}\right) = 1 - \ln(2e) = -\ln 2 < 0 \rightarrow \text{Max}$$

$$x = \frac{e}{a} \quad (g(x))$$



$$\frac{\ln^2(2e) - 1}{2} = \int_{\frac{e}{a}}^e (\ln(ax) \cdot \frac{1}{x}) dx$$

$$\frac{\ln^2(2e) - 1}{2} = \left. \frac{\ln^2(ax)}{2} \right]_{\frac{e}{a}}^e$$

$$\ln^2(2e) - 1 = \ln^2(ae) - (\ln^2(e))$$

$$\ln^2(2e) = \ln^2(ae)$$

$$\ln(2e) = \ln(ae) \quad \text{or} \quad \ln(2e) = -\ln(ae) = \ln(ae)^{-1}$$

$$2e = ae$$

$$2e = \frac{1}{ae}$$

$$\boxed{a = 2}$$

$$\cancel{a = \frac{1}{2e^2}} \quad a > 1$$

$$f(x) = \frac{\ln(2x)}{x}$$

$$a = 2$$

x -

( , , )

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

$$\boxed{f'(x) = \frac{1 - \ln(2x)}{x^2}}$$

$$f''(x) = \frac{-\frac{2x^2}{2x} - 2x(1 - \ln(2x))}{x^4}$$

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

$$\boxed{f''(x) = \frac{-3x + 2x \ln(2x)}{x^4}}$$

$$0 = -3x + 2x \ln(2x)$$

$$\ln(2x) = \frac{3}{2}$$

$$2x = e^{\frac{3}{2}}$$

$$\boxed{x = 0.5^2 \sqrt{e^3}} \quad (x = 2.241)$$

$$f''(2.2) = -3 \cdot 2.2 + 2 \cdot 2.2 \ln(2 \cdot 2.2) = -0.008 < 0 \rightarrow \cap$$

$$f''(2.4) = -3 \cdot 2.4 + 2 \cdot 2.4 \ln(2 \cdot 2.4) = 0.329 > 0 \rightarrow \cup$$

.

$$x = 0.5^2 \sqrt{e^3}$$

$$x = 0.5^2 \sqrt{e^3}$$

: