

$x^2 + y^2 - 4x + 6y = 887$
 $(x-2)^2 + (y+3)^2 = 900$
 $M(2, -3)$
 $AC = \frac{2}{3} AM$ $AC = \frac{1}{3} AB$
 $AB = 2AM$
 C
 $C(\frac{2 \cdot 2 + 1 \cdot 20}{3}, \frac{2 \cdot (-3) + 1 \cdot 21}{3})$
 $C(8, 5)$
 $P(s, t)$

$$\left. \begin{aligned} s &= \frac{4 \cdot 8 + 1 \cdot x_E}{5} \rightarrow x_E = 5s - 32 \\ t &= \frac{4 \cdot 5 + 1 \cdot y_E}{5} \rightarrow y_E = 5t - 20 \end{aligned} \right\} \boxed{E(5s - 32, 5t - 20)}$$

$$m_{AM} = \frac{21 + 3}{20 - 2} = \frac{4}{3} \rightarrow m_{AE} = -0.75$$

(-1 ,)

$$AE \equiv y - 21 = -0.75(x - 20) \rightarrow y = -0.75x + 36$$

$$E(5s - 32, 5t - 20)$$

$$5t - 20 = -0.75(5s - 32)x + 36$$

$$5t - 20 = -3.75s + 24 + 36$$

$$5t = -3.75s + 80 \quad / : 5$$

$$t = -0.75s + 16$$

$$\boxed{y = -0.75x + 16}$$

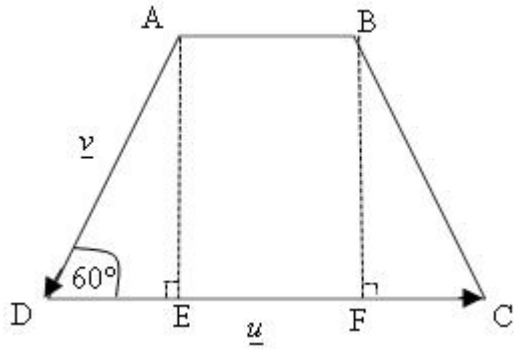
$$y = -0.75x + 16, E(5s - 32, 5t - 20) :$$

(180° -

) $\angle ADC = 60^\circ$ (1).

, CD

AE, BF

 $(\triangle ADE \cong \triangle BCF)$ 

$$DE = \frac{|u| - t|u|}{2} = \frac{(1-t)|u|}{2}$$

 $\triangle ADE$

$$\cos 60^\circ = \frac{DE}{AD}$$

$$0.5 = \frac{(1-t)|u|}{2|v|}$$

$$|v| = |u| - t|u|$$

$$t = \frac{|u| - |v|}{|u|}$$

$$t = \frac{|u| - |v|}{|u|} :$$

 \overline{BC}

(2)

$$\overline{BC} = -tu + v + u$$

$$\overline{BC} = (1-t)u + v$$

$$\overline{BC} = \left(1 - \frac{|u| - |v|}{|u|}\right)u + v$$

$$\overline{BC} = \left(\frac{|u| - |u| + |v|}{|u|}\right)u + v$$

$$\overline{BC} = \left(\frac{|v|}{|u|}\right)u + v$$

$$\overline{BC} = \left(\frac{|v|}{|u|}\right)u + v :$$

$$\underline{v} = (-1, y, 0), \underline{u} = (8, 6, -10) : \quad (1)$$

$$120^\circ \quad \underline{v}, \underline{u}$$

$$(-, -)$$

$$\underline{u} \cdot \underline{v} = |\underline{u}| |\underline{v}| \cos 120^\circ$$

$$(8, 6, -10) \cdot (-1, y, 0) = |(8, 6, -10)| |(-1, y, 0)| \cos 120^\circ$$

$$-8 + 6y + 0 = \sqrt{8^2 + 6^2 + (-10)^2} \sqrt{(-1)^2 + y^2 + 0^2} \cdot (-0.5)$$

$$16 - 12y = \sqrt{200} \sqrt{1 + y^2} \quad (*)^2$$

$$256 - 384y + 144y^2 = 200(1 + y^2)$$

$$56y^2 + 384y - 56 = 0$$

$$y_{1,2} = \frac{-384 \pm 400}{112} \rightarrow y_1 = \frac{1}{7}, \quad y_2 = -7$$

$$16 - 12 \cdot \frac{1}{7} = \sqrt{200} \sqrt{1 + \left(\frac{1}{7}\right)^2} \rightarrow 14 \frac{2}{7} = 14 \frac{2}{7} \quad o.k.$$

$$16 - 12 \cdot (-7) = \sqrt{200} \sqrt{1 + (-7)^2} \rightarrow 100 = 100 \quad o.k.$$

$$y = -7, \quad y = \frac{1}{7} :$$

DC (2)

() $\angle CAD = 90^\circ$ -

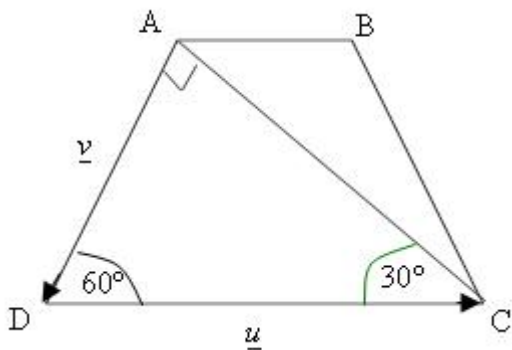
$$|\underline{u}| = 2|\underline{v}| \quad - 30^\circ, 60^\circ, 90^\circ \quad \Delta CAD -$$

$$|\underline{u}| = \sqrt{200} = 10\sqrt{2}$$

$$|\underline{v}| = \sqrt{1 + \left(\frac{1}{7}\right)^2} \neq \frac{10\sqrt{2}}{2} : y = \frac{1}{7}$$

$$|\underline{v}| = \sqrt{1 + (-7)^2} = \sqrt{50} = 5\sqrt{2} = \frac{10\sqrt{2}}{2} : y = -7$$

$$y = -7 :$$



a_1, a_2, a_3, \dots _____

$$a_7 = 64 + 64i$$

$$a_4 = -8 + 8i$$

$$\frac{a_7}{a_4} = \frac{a_4 q^3}{a_4} = q^3$$

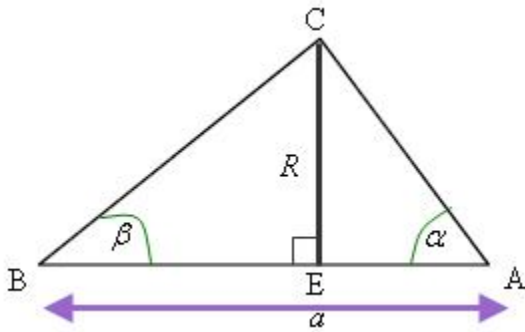
$$q^3 = \frac{64 + 64i}{-8 + 8i} = \frac{8(1+i)}{-1+i}$$

$$a_4 = a_1 q^3$$

$$a_1 = \frac{-8 + 8i}{\frac{8(1+i)}{-1+i}} = \frac{(-1+i)^2}{1+i} = \frac{(-1+i)^2(1-i)}{(1+i)(1-i)} = \frac{-2i(1-i)}{1+1} = -1-i$$

$$\boxed{a_1 = -1-i}$$

$$a_1 = -1-i :$$



. AB CE

(AE BE)

R . (CE)

ΔCBE

$$\tan S = \frac{R}{BE}$$

$$BE = \frac{R}{\tan S}$$

ΔCAE

$$\tan r = \frac{R}{AE}$$

$$AE = \frac{R}{\tan r}$$

$$a = \frac{R}{\tan r} + \frac{R}{\tan S}$$

$$a = R \cdot \frac{\tan S + \tan r}{\tan r \tan S}$$

$$R = \frac{a \tan r \tan S}{\tan S + \tan r}$$

$$V_{ABC} = V_{CBE} + V_{CAE}$$

$$V_{ABC} = \frac{f BE \cdot R^2}{3} + \frac{f AE \cdot R^2}{3}$$

$$V_{ABC} = \frac{f R^2}{3} \cdot (BE + AE)$$

$$V_{ABC} = \frac{\left(\frac{a \tan r \tan S}{\tan S + \tan r} \right)^2 \cdot af}{3} \cdot a$$

$$V_{ABC} = \frac{f a^3 \cdot \tan^2 r \tan^2 S}{3 (\tan S + \tan r)^2}$$

$$\frac{f a^3 \cdot \tan^2 r \tan^2 S}{3 (\tan S + \tan r)^2} :$$

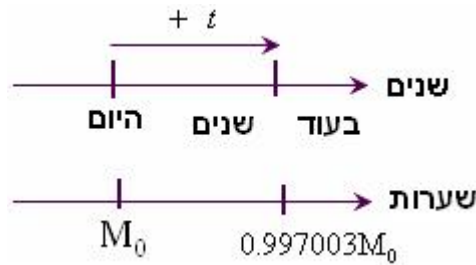
$$M_t = M_0 \cdot q^t$$

.t .q ()

. t - M_t , - M_0

$$q = \frac{100 - P}{100} = \frac{100 - 0.1}{100} = 0.999$$

$$\frac{100 - 0.2997}{100} \cdot M_0 = 0.997003M_0 : ,21 , t$$



$$0.997003M_0 = M_0 \cdot 0.999^t \quad /: M_0$$

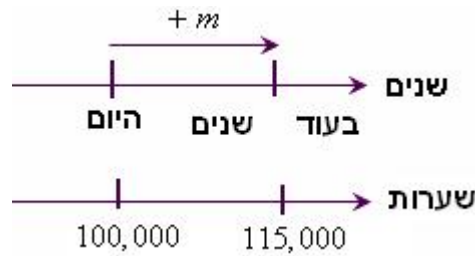
$$\Leftrightarrow 0.997003 = 0.999^t$$

$$\Leftrightarrow t = \frac{\ln 0.997003}{\ln 0.999}$$

$$\Leftrightarrow \boxed{t \approx 3}$$

. 0.2997% 21 () 3 :

. m - $M_t = 115,000.$, - $M_0 = 100,000.$



$$115,000 = 100,000 \cdot q^m \quad /: 100,000$$

$$\Leftrightarrow 1.15 = q^m$$

$$\Leftrightarrow \boxed{q = \sqrt[m]{1.15}}$$

$$\frac{100 + P}{100} = \sqrt[m]{1.15}$$

$$100 + P = 100 \cdot \sqrt[m]{1.15}$$

$$\boxed{P = 100 \cdot \sqrt[m]{1.15} - 100}$$

. $100 \cdot \sqrt[m]{1.15} - 100$ - :

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

(0, 3) -

$f(x)$

$$f'(0) = 0, \quad f(0) = 3 :$$

$$f'(x) = \int \left(\frac{1}{(2x-1)^2} + e \right) dx =$$

$$f'(x) = -\frac{1}{2(2x-1)} + ex + c$$

$$0 = -\frac{1}{2(2 \cdot 0 - 1)} + e \cdot 0 + c \quad \leftarrow f'(0) = 0$$

$$0 = 0.5 + c$$

$$c = -0.5$$

$$\boxed{f'(x) = -\frac{1}{2(2x-1)} + ex - 0.5}$$

$$f(x) = \int \left(-\frac{1}{2(2x-1)} + ex - 0.5 \right) dx =$$

$$f(x) = -0.25 \ln|2x-1| + 0.5ex^2 - 0.5x + c$$

$$3 = -0.25 \ln|2 \cdot 0 - 1| + 0.5e \cdot 0^2 - 0.5 \cdot 0 + c \quad \leftarrow f(0) = 3$$

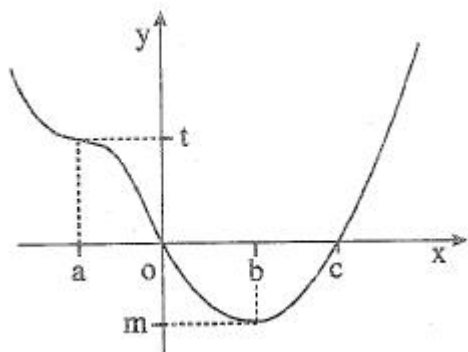
$$3 = -0.25 \ln 1 + c$$

$$c = 3$$

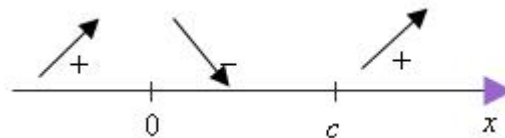
$$\boxed{f(x) = -0.25 \ln|2x-1| + 0.5ex^2 - 0.5x + 3}$$

$$f(x) = -0.25 \ln|2x-1| + 0.5ex^2 - 0.5x + 3 :$$

(1).



$f(x)$ $f'(x) \begin{matrix} x < 0 \\ 0 < x < c \\ x > c \end{matrix}$



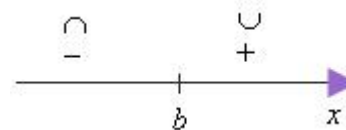
$x = 0$, $x = c$:

$f(a) = d$, $f(0) = s$, $f(b) = p$, $f(c) = k$:

$(0, s)$, (c, k) :

(2)

$f(x)$ $f'(x) \begin{matrix} x < b \\ x > b \end{matrix}$



$x = b$:

(b, p) :

$u(x) = e^{-f(x)}$:

$$\frac{du}{dx} = -f'(x) \cdot e^{-f(x)}$$

$$-du = f'(x) \cdot e^{-f(x)}$$

$$\int f'(x) \cdot e^{-f(x)} dx = \int -du = -u + c = -e^{-f(x)} + c$$

$$\int_b^c f'(x) \cdot e^{-f(x)} dx = \left[-e^{-f(x)} \right]_b^c = -e^{-f(c)} + e^{-f(b)} = -e^{-k} + e^{-p}$$

$$\int_b^c f'(x) \cdot e^{-f(x)} dx = \frac{1}{e^p} - \frac{1}{e^k}$$

$$\frac{1}{e^p} - \frac{1}{e^k} :$$