

$p = 2, y^2 = 4x$  I

$p = 2, y^2 = -4x$  II

$y = \dots, B - A$

$yy_0 = p(x + x_0), x = -x_0, y = 0$

$x_C = 0, y = \dots, (x - \dots)$

$y_C = \frac{y_A + 0}{2} = \frac{y_A}{2}$

$(y^2 = -2px) \quad (y^2 = -4x)$

$y_C = \frac{y_B}{2}, yy_0 = -p(x + x_0)$

$\frac{y_B}{2} = \frac{y_A}{2} \rightarrow y_B = y_A, C$

$(x_B = -x_A, y = \dots)$

$C(0, \frac{y_A}{2})$

$$\left. \begin{aligned} m_{AC} &= \frac{p}{y_A} = \frac{2}{y_A} \\ m_{BC} &= \frac{-p}{y_B} = \frac{-2}{y_A} \end{aligned} \right\} \frac{2}{y_A} \cdot \frac{-2}{y_A} = -1 \rightarrow y_A = 2 \leftarrow y_A > 0$$

$B(-1, 2), A(1, 2) :$

$B(-1, 2), A(1, 2) :$

$$\cdot C(0,1) \quad , \quad ACBM - \quad (1) \cdot$$

$$\cdot (AB) \quad (0,2)$$

$$\cdot M(0,3) - \quad , MC$$

$$\cdot M(0,3) :$$

$$\cdot BC - AC \quad M(0,3) \quad (2)$$

$$MA \quad , ( \quad ) \quad MA$$

$$R = \sqrt{(0-1)^2 + (3-2)^2} = \sqrt{2} :$$

$$\cdot x^2 + (y-3)^2 = 2$$

$$\cdot x^2 + (y-3)^2 = 2 \quad :$$



$$V_{OKPQ} = \frac{S_{\Delta KPQ} \cdot OP}{3} = \frac{\frac{3 \cdot 2}{2} \cdot 3}{3} = 3$$

$$V_{OBCD} = \frac{S_{\Delta OBC} \cdot OD}{3} = \frac{\frac{4 \cdot 3}{2} \cdot 6}{3} = 18$$

$$\frac{V_{OKPQ}}{V_{OBCD}} = \frac{3}{18} = \frac{1}{6}$$

$$\frac{V_{OKPQ}}{V_{OBCD}} = \frac{1}{6} :$$

. KPQ CB

$$\vec{CB} = \underline{B} - \underline{C} = \underline{x} = (3, -4, 0)$$

$$\sin \angle(\vec{CB}, f_{KPQ}) = \frac{|(3, -4, 0) \cdot (3, 3, 2)|}{\sqrt{3^2 + (-4)^2 + 0^2} \cdot \sqrt{3^2 + 3^2 + 2^2}} = \frac{|(3 \cdot 3 - 4 \cdot 3 + 0 \cdot 2)|}{5 \cdot \sqrt{22}} = \frac{3}{5 \cdot \sqrt{22}} \rightarrow \angle(\vec{CB}, f_{KPQ}) = 7.349^\circ$$

. 7.349° KPQ CB :

.  $z = x + yi$  , I  $z\bar{z} + i(z - \bar{z}) + z + \bar{z} = 0$  .

$(x + yi)(x - yi) + i[x + yi - (x - yi)] + x + yi + x - yi = 0$

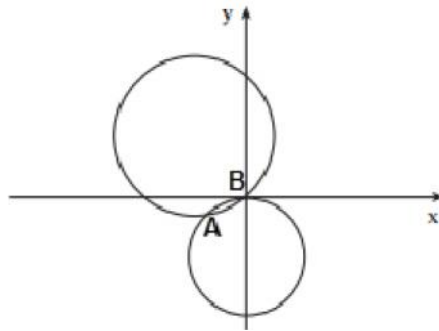
$x^2 + y^2 + i(+2yi) + 2x = 0$

$x^2 + y^2 - 2y + 2x = 0$

$(x+1)^2 + (y-1)^2 = 2$

.  $\sqrt{2}$  , (-1, 1)

. II  $|z|^2 + i(\bar{z} - z) = 0$



$(\sqrt{x^2 + y^2})^2 + i[(x - yi) - (x + yi)] = 0$

$x^2 + y^2 + i(-2yi) = 0$

$x^2 + y^2 + 2y = 0$

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

. 1 , (0, 1)

$$\begin{cases} x^2 + y^2 - 2y + 2x = 0 \\ x^2 + y^2 + 2y = 0 \end{cases}$$

$-4y + 2x = 0$

$x = 2y$

$(2y)^2 + y^2 + 2y = 0$

$5y^2 + 2y = 0$

$y(5y + 2) = 0$

$y = 0 \rightarrow x = 0$

$y = -0.4 \rightarrow x = -0.8$  }  $\boxed{B(0, 0), A(-0.8, -0.4)}$   $\leftarrow x_A < x_B$

. B(0, 0), A(-0.8, -0.4) :

$$\cdot \sqrt{2} \quad , (-1, 1)$$

$$\cdot (-1, 1)$$

$$\cdot x^2 + (y+1)^2 = 1 :$$

$$P(x_0, y_0)$$

$$P(x_0, y_0) -$$

⋮

$$z_0 = -1 + i$$

$$\bar{z} = -1 - i$$

$$\bar{z} = -1 - i$$

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

$$1 = 1 \quad \text{ok.}$$

⋮

$$\cdot z_1 = -0.8 - 0.4i \quad \cdot$$

$$a_1 = 5z_1 = -4 - 2i$$

$$d = z_0 = -1 + i$$

$$S_n = \frac{n}{2} [2a_1 + d(n-1)]$$

$$S_n = \frac{n}{2} [2(-4 - 2i) + (-1 + i)(n-1)]$$

$$S_n = \frac{n}{2} (-8 - 4i - n + 1 + in - i)$$

$$\cdot 0 -$$

$$0 = \frac{n}{2} (-4 + n - 1) \quad : \frac{n}{2} \neq 0$$

$$-5 + n = 0$$

$$\boxed{n = 5}$$

$$\cdot , n = 5$$

⋮

$$f(x) = e^{ax^2+bx+2}$$

$$f(x) = f(-x) \quad , y -$$

$$e^{a(-x)^2+b(-x)+2} = e^{ax^2+bx+2}$$

$$ax^2 - bx + 2 = ax^2 + bx + 2$$

$$-2bx = 0$$

$$.b = 0 \quad x$$

$$.b = 0 :$$

x , y

$$f'(x) = 2axe^{ax^2+2}$$

$$f''(x) = 2a \cdot (e^{ax^2+2} + x \cdot 2axe^{ax^2+2})$$

$$\boxed{f''(x) = 2ae^{ax^2+2} \cdot (1 + 2ax^2)}$$

$$f(x) = e^2 \quad - \quad a = 0$$

$$.f''(x) > 0 \quad ,$$

x ,

$$a > 0$$

x - ,

$$a < 0$$

,(a < 0 , )

$$.f''(0.5) = 0 \quad , \quad x = \pm 0.5$$

$$1 + 2a \cdot 0.5^2 = 0$$

$$\boxed{a = -2}$$

$$.a = -2 :$$

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

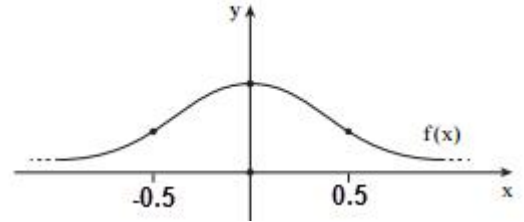
$$f(x) = e^{-2x^2+2} \rightarrow e^{-\infty} \rightarrow 0, x \rightarrow \pm\infty \quad -\infty - \quad -2x^2 + 2 \quad (1)$$

$$y = 1.03 \cdot 10^{-10} \rightarrow 0 \quad x = \pm 5 \quad :$$

$$(x - \quad ) y - \quad y = 0 :$$

$$(2)$$

$$x = 0$$



$$- x > 0$$

$$, x < 0$$

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

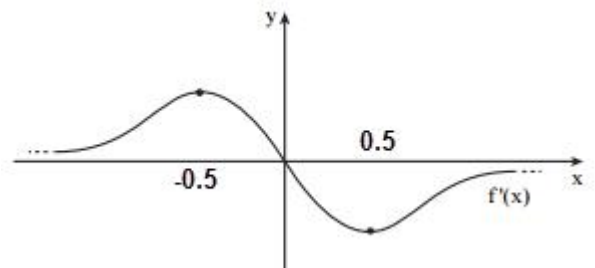
$$f'(x) - f''(x) < 0$$

$$, -0.5 < x < 0.5$$

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

$$f'(x) - f''(x) > 0$$

:



$$h(x) = f'(x) \cdot f''(x)$$

$$( \quad )$$

$$f(x) - x < -0.5$$

$$f(x) - 0 < x < 0.5$$

$$. x < -0.5 \quad 0 < x < 0.5 :$$



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$$\cdot (a, b > 0), f(x) = \ln(ae^x - be^{2x}) \quad g(x) = \ln(2 - e^x) \quad \cdot$$

$$\cdot 2 - e^x > 0 \rightarrow e^x < 2 \rightarrow x < \ln 2 \quad g(x) = \ln(2 - e^x)$$

$$\cdot ae^x - be^{2x}$$

$$x = \ln 2$$

$$ae^{\ln 2} - be^{2\ln 2} = 0$$

$$2a - be^{\ln 4} = 0$$

$$2a - 4b = 0$$

$$\boxed{a = 2b}$$

\cdot \quad \vdots

$$\cdot f(x) = \ln(2be^x - be^{2x}) \quad \cdot$$

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

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

$$e^x = 1$$

$$x = 0$$

$$g(0) = \ln(2 - e^0) = 0$$

$$\cdot (0, 0)$$

$$f(x) = \ln(2be^x - be^{2x}) \quad \cdot$$

$$0 = \ln(2be^0 - be^{2 \cdot 0})$$

$$2b - b = 1$$

$$\boxed{b = 1} \rightarrow \boxed{a = 2}$$

$$\cdot (0, 0) \quad f(x) = \ln(2e^x - e^{2x})$$

$$\cdot b = 1, a = 2 \quad \cdot$$

$$x < \ln 2 \quad (\cap)$$

$$g(x) = \ln(2 - e^x)$$

$$g'(x) = \frac{-e^x}{2 - e^x}$$

$$x < \ln 2$$

(

, )

$$g''(x) = \frac{-e^x(2 - e^x) - e^x \cdot e^x}{(2 - e^x)^2}$$

$$g''(x) = \frac{e^x(-2 + e^x - e^x)}{2 - e^x}$$

$$g''(x) = \frac{-2e^x}{2 - e^x}$$

(

, )

$$x < \ln 2 \quad (\cap)$$

∴

$$f(x) - g(x) = \ln(2e^x - e^{2x}) - \ln(2 - e^x)$$

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

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

$$f(x) - g(x) = \ln e^x$$

$$f(x) - g(x) = x$$

$$y = x$$

$$(0, 0)$$

$$g(x) \quad f(x)$$

∴

$$x < 0.693147, x < \ln 2 \quad (1)$$

$$x = \ln 2 \quad -\infty \quad f(0.6929) = -6.91 \rightarrow -\infty$$

$$x = \ln 2 \quad -\infty \quad g(0.6929) = -7.61 \rightarrow -\infty$$

$$x \rightarrow -\infty$$

$$-\infty \quad f(-10) = -9.3 \rightarrow -\infty$$

$$g(x) \rightarrow \ln 2 \quad e^x \rightarrow 0 \quad x \rightarrow -\infty, g(-10,000) = 0.693 = \ln 2$$

$$x \rightarrow -\infty \quad ( \quad ) y = \ln 2, x = \ln 2 : g(x) \quad x = \ln 2 : f(x) :$$

(2)

