

$(M(a, 0))$ x -

$(-6, 3) - (1, 4)$

$$\sqrt{(a-1)^2 + (0-4)^2} = \sqrt{(a+6)^2 + (6-3)^2}$$

$$a^2 - 2a + 16 + 16 = a^2 + 12a + 36 + 9$$

$$a = -2 \rightarrow \boxed{M(-2, 0)}$$

$$R = \sqrt{(-2-1)^2 + (0-4)^2} = 5$$

$(-7, 0) - (3, 0) :$

5

$(-7, 0), (3, 0) :$ x -

$\cdot \sqrt{2}$

DC

$\cdot BC$

AB

$$m_{AB} = \frac{4-3}{1+6} = \frac{1}{7}$$

$$y-4 = \frac{1}{7}(x-1)$$

$$\boxed{AB \equiv -x + 7y - 27 = 0}$$

$$d_{AB-(0,0)} = -\frac{-0+7\cdot 0-27}{\sqrt{1+49}} = \frac{27\sqrt{2}}{10}$$

$$BC = \frac{27\sqrt{2}}{10} - \sqrt{2} \rightarrow \boxed{BC = \frac{17\sqrt{2}}{10}}$$

$\cdot -7$ x

$$y-0 = -7(x+7)$$

$$\boxed{AD \equiv 7x + y + 49 = 0}$$

$$y-0 = -7(x-3)$$

$$\boxed{BC \equiv 7x + y - 21 = 0}$$

$$d_{BC-AD} = \frac{49+21}{\sqrt{49+1}} = 7\sqrt{2} \rightarrow \boxed{AB = 7\sqrt{2}}$$

$$S_{ABCD} = AB \cdot BC = 7\sqrt{2} \cdot \frac{17\sqrt{2}}{10} = 23.8 \rightarrow \boxed{S_{ABCD} = 23.8} :$$

$\cdot "$ 23.8 ABCD :

. $z = 0$

[xy]

, OAB

OC

AOBC

. A(3,0,0) , O(0,0,0) , C(0,0,12) :

. $AB \perp AC$, $\overline{AC} \cdot \overline{AB} = 0$

. AOC

AB

, OC -

, AC

AB -

. y -

, AO -

AB -

. y -

AB :

. B(3,4,0) , AB = 4 - (OA = 3, OB = 5) Δ OAB -

. CAB

$\overline{AB} = \underline{x} = (0,1,0)$

$\overline{AC} = \underline{C} - \underline{A} = \underline{x} = (-3,0,12)$

. $\underline{x} = (3,0,0) + s(0,1,0) + t(1,0,-4) :$

. $b = 0$ y -

. $a = 4c$ - $a - 4c = 0$ - $(a,0,c) \cdot (1,0,-4) = 0$

. $d = -12$ - C(0,0,12) . $4x + z + d = 0 :$ CAB

. $4x + z - 12 = 0$ CAB

. $x = 0$ [zy]

. $\cos \sphericalangle(f_{CAB}, [zy]) = \frac{|(4,0,1) \cdot (1,0,0)|}{\sqrt{4^2 + 1^2} \sqrt{1^2}} = \frac{4}{\sqrt{17}} \rightarrow \sphericalangle(f_{CAB}, [zy]) = 14.036^\circ$

. 14.036° [zy] CAB :

. $CB = CD$, CAB D

, CDB DB AC -

. D(3,-4,0) - ,

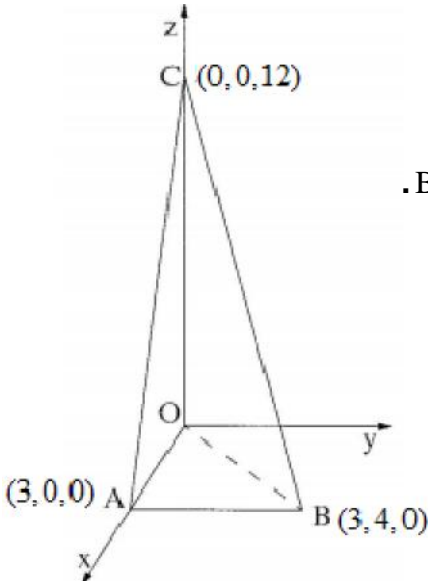
. $x = 0$ [zy] CD

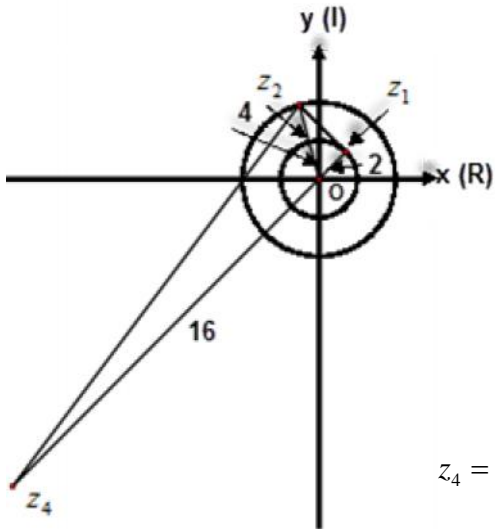
. $\overline{CD} = \underline{D} - \underline{C} = \underline{x} = (3,-4,-12)$

. $\sin \sphericalangle(\overline{CD}, [zy]) = \frac{|(3,-4,-12) \cdot (1,0,0)|}{\sqrt{3^2 + (-4)^2 + 12^2} \sqrt{1^2}} = \frac{3}{13} \rightarrow \sphericalangle(\overline{CD}, [zy]) = 13.342^\circ$

. 13.342° [zy] CD :

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$|z_1| = 2$, z_1

$|z_2| = 4$, z_2

$\angle z_1 O z_2 = 60^\circ$

$z_2 = 2cis(\alpha + 60^\circ)$ $z_1 = 2cis \alpha$

$q = \frac{z_2}{z_1} = \frac{2cis(\alpha + 60^\circ)}{2cis \alpha} \rightarrow q = 2cis 60^\circ :$

z_4

$z_4 = z_1 q^3 = 2cis \alpha \cdot (2cis 60^\circ)^3 = 2cis \alpha \cdot 8cis 180^\circ \rightarrow z_4 = 16cis(\alpha + 180^\circ)$

$z_4 - z_1$

$\angle z_4 O z_1 = 180^\circ$

$45^\circ + 180^\circ = 225^\circ$ z_4 ()

$\arg(z_4) = 225^\circ :$

$z_1 \cdot z_4 = -32i :$

$2cis 45^\circ \cdot r_{z_4} cis 225^\circ = 32 cis 270^\circ$

$r_{z_4} cis 270^\circ = 16 cis 270^\circ$

$r_{z_4} = 16$

$S_{\Delta z_1 O z_2} = \frac{2 \cdot 4 \sin 60^\circ}{2} = 2\sqrt{3} : \Delta z_1 O z_2$

$S_{\Delta z_4 O z_2} = \frac{16 \cdot 4 \sin 120^\circ}{2} = 16\sqrt{3} : \Delta z_4 O z_2$

" $18\sqrt{3}$ $z_1 z_2 z_4$:

$f(x) = \frac{\ln(ax-2)}{ax-2}$ $(a \neq 0)$ (1)
 $ax-2 > 0 \rightarrow x > \frac{2}{a}$

$x = \frac{2}{a}$ (2)

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

$(a > 0, x > \frac{2}{a})$

$0 = \ln(ax-2)$

$ax-2=1 \rightarrow x = \frac{3}{a} \rightarrow \left(\frac{3}{a}, 0\right)$

$\left(\frac{3}{a}, 0\right)$

(3)

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

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

$1 - \ln(ax-2) = 0$

$\ln(ax-2) = 1$

$ax-2 = e$

$x = \frac{e+2}{a} \rightarrow y = \frac{\ln\left(a \cdot \frac{e+2}{a} - 2\right)}{a \cdot \frac{e+2}{a} - 2} = \frac{1}{e} \rightarrow \left(\frac{e+2}{a}, \frac{1}{e}\right)$

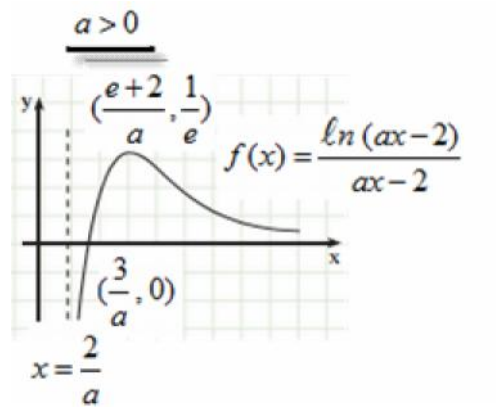
$(1 - \ln(ax-2))$ $a > 0$

$((1 - \ln(ax-2))' = -\frac{a}{ax-2} < 0)$ $1 - \ln(ax-2)$

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

$\left(\frac{e+2}{a}, \frac{1}{e}\right)$

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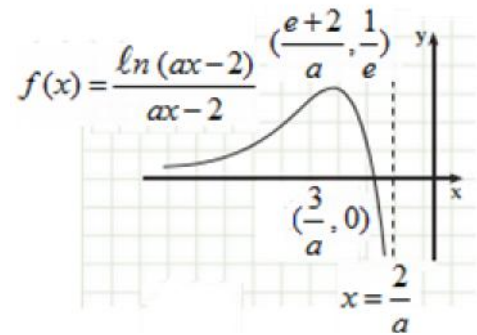
• y - $x < \frac{2}{a}$: $a < 0$

• y - x -

• $(a(1 - \ln(ax-2)))' = a(-\frac{a}{ax-2}) < 0$ $a(1 - \ln(ax-2))$

• $f(x)$, $x = \frac{e+2}{a}$,

$a < 0$



$\cdot (-2, 0)$

$$\cdot a = -1 \quad \cdot -2 = \frac{2}{a} \quad ,$$

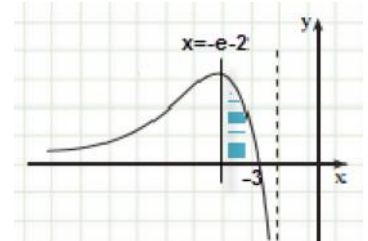
$$x = -2 \quad \cdot$$

$$y = 0$$

$$, x \quad \cdot , f(x) = \frac{\ln(-x-2)}{-x-2}$$

$\cdot (\quad)$

$$, x = \frac{e+2}{-1} = -e-2$$



$$S = \int_{-e-2}^{-3} \left(\frac{\ln(-x-2)}{-x-2} - 0 \right) dx$$

$$S = \int_{-e-2}^{-3} \left(-\ln(-x-2) \cdot \frac{-1}{-x-2} \right) dx$$

$$S = - \left. \frac{(\ln(-x-2))^2}{2} \right|_{-e-2}^{-3}$$

$$x = -3: - \frac{(\ln(-(-3)-2))^2}{2} = 0$$

$$x = -e-2: - \frac{(\ln(-(-e-2)-2))^2}{2} = -\frac{1}{2}$$

$$\left. \begin{array}{l} x = -3: \dots \\ x = -e-2: \dots \end{array} \right\} S = 0 - \left(-\frac{1}{2}\right) = \boxed{\frac{1}{2}}$$

$\cdot \quad \cdot \quad \frac{1}{2} \quad \cdot$

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

$$f(0) = \frac{0^2 + 2 \cdot 0 + a}{e^0} = a \rightarrow (0, a) : y \tag{1}$$

$$x^2 + 2x + a = 0 : x$$

$$a > 4 \quad \Delta = 4 - 4a$$

$(0, a) :$

(2)

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

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

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

$$(2-a < 0 - a > 4)$$

x

$x : , x : :$

$x (\cup)$

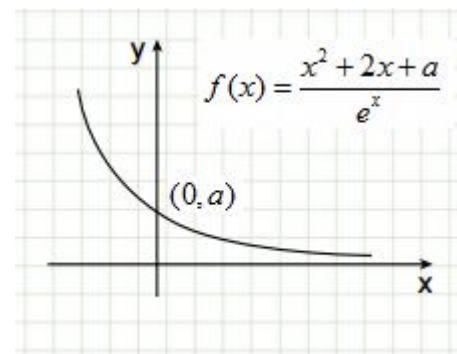
$f(x)$

$f''(x) > 0 ,$

(3)

$f(x) - :$

$f(x)$ **(4)**



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

$$x \quad (\cap) \quad f'(x) \quad -$$

$$, f'(x) , \quad :$$

$$. x - \quad , x \quad f'(x) .$$

$$\int_0^1 (0 - f'(x)) dx = 5 - \frac{8}{e}$$

$$-f(1) - (-f(0)) = 5 - \frac{8}{e}$$

$$-\frac{1^2 + 2 \cdot 1 + a}{e^1} - (-a) = 5 - \frac{8}{e}$$

$$-\frac{3+a}{e} + a = 5 - \frac{8}{e}$$

$$-3 - a + ea = 5e - 8$$

$$-a(-1+e) = -5(1-e)$$

$$\boxed{a = 5}$$

$$. a = 5 :$$