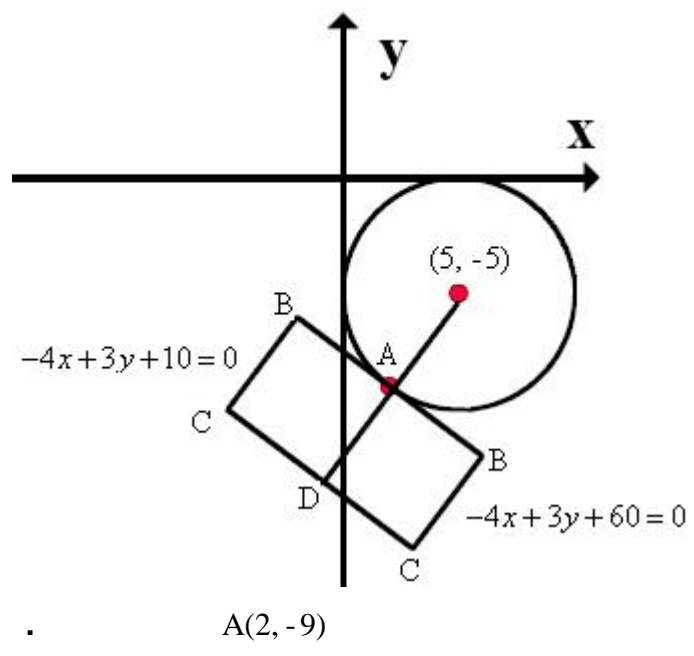


.( , )



R

$$(x - R)^2 + (y + R)^2 = R^2 :$$

A(2, -9)

$$(2 - R)^2 + (-9 + R)^2 = R^2$$

$$4 - 4R + R^2 + 81 - 18R + R^2 = R^2$$

$$R^2 - 22R + 85 = 0$$

$$R = 17,5$$

$$(x - 5)^2 + (y + 5)^2 = 25 \quad , \quad (x - 17)^2 + (y + 17)^2 = 289 :$$

A(2, -9)

ABCD

AB

( )  $(x-5)^2 + (y+5)^2 = 25$

( ) AD BC

AB -

( ) AD

AB

$$m = \frac{-9+5}{2-5} = \frac{4}{3}$$

$$y+5 = \frac{4}{3}(x-5)$$

$$\boxed{-4x+3y+35=0}$$

BC - AD :

,5 ,  
 $d = \frac{|c_1 - c_2|}{\sqrt{a^2 + b^2}}$  :

$$5 = \frac{|c-35|}{\sqrt{(-4)^2 + 3^2}}$$

$$25 = |c-35|$$

$$25 = c-35 \quad 25 = -c+35$$

$$c = 60$$

$$c = 10$$

:

$$-4x+3y+60=0, -4x+3y+10=0$$

AD

,BC

, - AB

B

$$m = -1 : \frac{4}{3} = -0.75$$

$$y+9 = -0.75(x-2)$$

$$\boxed{y = -0.75x - 7.5}$$

(0, -7.5)

y -

$$d = \sqrt{(0-2)^2 + (-7.5+9)^2} < 5 : \quad A(2, -9) -$$

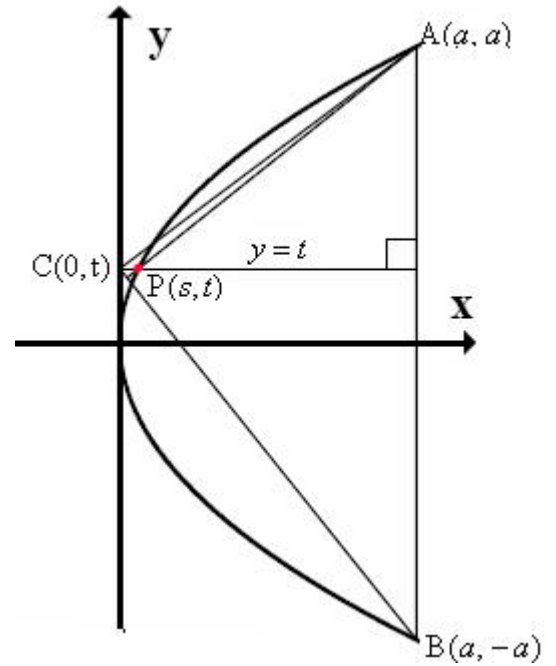
B

( )

B

$$-4x+3y+60=0$$

$$-4x+3y+60=0 :$$



.x -

.  $B(a, -a) - A(a, a)$

$y = t$  ,  $AB$  ,  $P(s, t)$   
 $C(0, t)$  :  $y = t$   $C$   
 $m_{AP} \cdot m_{BC} = -1$  :  $BC$   $AP$  :  
 :

$$\frac{a-t}{a-s} \cdot \frac{-a-t}{a-0} = -1$$

$$\Leftrightarrow -a^2 - at + at + t^2 = -a^2 + as$$

$$\Leftrightarrow t^2 = as$$

$$y^2 = ax :$$

$$y^2 = ax :$$

$$y^2 = ax \quad \text{AC .}$$

$$A(a, a) \quad -$$

$$A(a, a) -$$

$$y^2 = ax \quad P = \frac{a}{2}, \quad yy_0 = p(x+x_0) :$$

$$ya = \frac{a}{2}(x+a) : \quad A(a, a)$$

$$C \quad x = 0$$

$$ya = \frac{a}{2}(0+a)$$

$$y = \frac{a}{2}$$

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

AC

$$d_{AC} = \sqrt{(a - \frac{a}{2})^2 + (a - 0)^2} = \sqrt{1.25a^2}$$

$$d_{AC} = a\sqrt{\frac{5}{4}}$$

$$\boxed{d_{AC} = \frac{a\sqrt{5}}{2}}$$

$$d_{AC} = \frac{a\sqrt{5}}{2} :$$

$$x+2y+2z-11=0 - x+2y+2z-2=0 :$$

$$\frac{|d_1-d_2|}{\sqrt{a^2+b^2+c^2}} :$$

$$\frac{|-2+11|}{\sqrt{1^2+2^2+2^2}} = 3 :$$

$$" \quad 27$$

$$3$$

$$" \quad 27 :$$

$$. \quad 2x+y-2z=14$$

$$AB'B'A'$$

$$3$$

$$, \quad CC'D'D'$$

$$\frac{|d+14|}{\sqrt{2^2+1^2+(-2)^2}} = 3$$

$$|d+14|=9$$

$$d+14=9 \quad -d-14=9$$

$$d=-5 \quad d=-23$$

$$2x+y-2z=23$$

$$2x+y-2z=5$$

$$C'D'$$

$$A'B'C'D'$$

$$x+2y+2z=11$$

$$+ \begin{cases} 2x+y-2z=23 \\ x+2y+2z=11 \end{cases}$$

$$\Leftrightarrow 3x+3y=34$$

$$\Leftrightarrow x+y=\frac{34}{3}$$

$$\Leftrightarrow x=t, \quad y=\frac{34}{3}-t$$

$$\Leftrightarrow t+\frac{68}{3}-2t+2z=11$$

$$\Leftrightarrow z=-5\frac{5}{6}+0.5t$$

$$\Leftrightarrow (t, \frac{34}{3}-t, -5\frac{5}{6}+0.5t)$$

$$C'D': (0, 11\frac{1}{3}, -5\frac{5}{6})+t(1, -1, 0.5)$$

$$+ \begin{cases} 2x+y-2z=5 \\ x+2y+2z=11 \end{cases}$$

$$\Leftrightarrow 3x+3y=16$$

$$\Leftrightarrow x+y=\frac{16}{3}$$

$$\Leftrightarrow x=t, \quad y=2-t$$

$$\Leftrightarrow t+\frac{32}{3}-2t+2z=11$$

$$\Leftrightarrow z=\frac{1}{6}+0.5t$$

$$\Leftrightarrow (t, \frac{16}{3}-t, \frac{1}{6}+0.5t)$$

$$C'D': (0, \frac{16}{3}, \frac{1}{6})+t(1, -1, 0.5)$$

$$(0, 11\frac{1}{3}, -5\frac{5}{6})+t(1, -1, 0.5) , (0, \frac{16}{3}, \frac{1}{6})+t(1, -1, 0.5) :$$

"

$$z^3 = \cos \theta + i \sin \theta \quad (1)$$

$$z^3 = 1 \text{cis} \theta$$

$$: \quad , z_k = \sqrt[n]{r} \text{cis} \left( \frac{\theta}{n} + \frac{2f k}{n} \right)$$

$$z_0 = \sqrt[3]{1} \text{cis} \left( \frac{\theta}{3} + \frac{2f \cdot 0}{3} \right) \rightarrow z_0 = \text{cis} \left( \frac{\theta}{3} \right)$$

$$z_1 = \sqrt[3]{1} \text{cis} \left( \frac{\theta}{3} + \frac{2f \cdot 1}{3} \right) \rightarrow z_1 = \text{cis} \left( \frac{\theta}{3} + \frac{2f}{3} \right)$$

$$z_2 = \sqrt[3]{1} \text{cis} \left( \frac{\theta}{3} + \frac{2f \cdot 2}{3} \right) \rightarrow z_2 = \text{cis} \left( \frac{\theta}{3} + \frac{4f}{3} \right)$$

$$(z_0 - \quad) z_0 = \text{cis} \left( \frac{\theta}{3} \right) :$$

$$: \quad , \quad (2)$$

$$r_1 \text{cis} \theta_1 \cdot r_2 \text{cis} \theta_2 = r_1 r_2 \text{cis} (\theta_1 + \theta_2)$$

$$z_1 = \text{cis} \left( \frac{\theta}{3} + \frac{2f}{3} \right) = \text{cis} \left( \frac{\theta}{3} \right) \cdot \text{cis} \left( \frac{2f}{3} \right) = z_0 \cdot \text{cis} 120^\circ$$

$$z_2 = \text{cis} \left( \frac{\theta}{3} + \frac{4f}{3} \right) = \text{cis} \left( \frac{\theta}{3} \right) \cdot \text{cis} \left( \frac{4f}{3} \right) = z_0 \cdot \text{cis} 240^\circ$$

$$z_2 = z_0 \cdot \text{cis} 240^\circ, z_1 = z_0 \cdot \text{cis} 120^\circ :$$

$$6 \cdot \left[ 1 + \left(\frac{9}{4}\right)^{-x} - \left(\frac{2}{3}\right)^x \right] < 7 \cdot \left(\frac{3}{2}\right)^{-x} \quad -$$

$$6 \cdot \left[ 1 + \left(\frac{9}{4}\right)^{-x} - \left(\frac{2}{3}\right)^x \right] < 7 \cdot \left(\frac{3}{2}\right)^{-x}$$

$$\Leftrightarrow 6 \cdot \left[ 1 + \left(\frac{3}{2}\right)^{-2x} - \left(\frac{3}{2}\right)^{-x} \right] < 7 \cdot \left(\frac{3}{2}\right)^{-x} \left(\frac{3}{2}\right)^{-x} = t$$

$$\Leftrightarrow 6 \cdot [1 + t^2 - t] < 7 \cdot t \quad \leftarrow \left(\frac{3}{2}\right)^{-x} = t$$

$$\Leftrightarrow 6 + 6t^2 - 6t < 7t$$

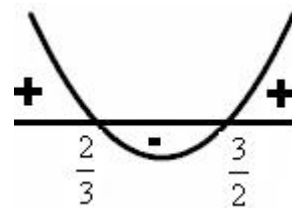
$$\Leftrightarrow 6 + 6t^2 - 6t < 7t$$

$$\Leftrightarrow \boxed{6t^2 - 13t + 6 < 0}$$

$$6t^2 - 13t + 6 = 0$$

$$t_{1,2} = \frac{13 \pm 5}{12}$$

$$t_1 = \frac{3}{2}, \quad t_2 = \frac{2}{3}$$



$$\frac{2}{3} < t < \frac{3}{2} \rightarrow \frac{2}{3} < \left(\frac{3}{2}\right)^{-x} < \frac{3}{2} :$$

$$\left(\frac{3}{2}\right)^{-x} > \frac{2}{3} = \left(\frac{3}{2}\right)^{-1} \quad \cap \quad \left(\frac{3}{2}\right)^{-x} < \frac{3}{2} = \left(\frac{3}{2}\right)^1$$

$$-x > -1 \quad \cap \quad -x < 1$$

$$x < 1 \quad \cap \quad x > -1$$

$$-1 < x < 1 :$$

$$f(x) = \frac{x^2 - 4x + 5}{x - 2}$$

,

( )

$$\begin{aligned} & \frac{x-2}{x^2-4x+5} \cdot x-2 \\ & \frac{x^2-2x}{x^2-4x+5} \\ & = -2x+5 \\ & \frac{-2x+4}{x^2-4x+5} \\ & = 1 \end{aligned}$$

$$f(x) = \begin{cases} x-2 + \frac{1}{x-2}, & x \neq 2 \\ \emptyset & x = 2 \end{cases}$$

(1).

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

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

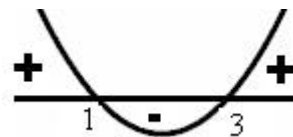
$$f'(x) = \frac{x^2 - 4x + 4 - 1}{(x-2)^2}$$

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

$$0 = x^2 - 4x + 3 = (x-1)(x-3)$$

$$x = 1 \rightarrow (1, -2) \quad x = 3 \rightarrow (3, 2)$$

( )



|   |     |   |   |   |     |   |    |
|---|-----|---|---|---|-----|---|----|
|   | 1   |   | 2 |   | 3   |   | x  |
| + | 0   | - |   | - | 0   | + | y' |
| ↖ | Max | ↘ |   | ↙ | Min | ↗ |    |

(1, -2) , (3, 2) :

..

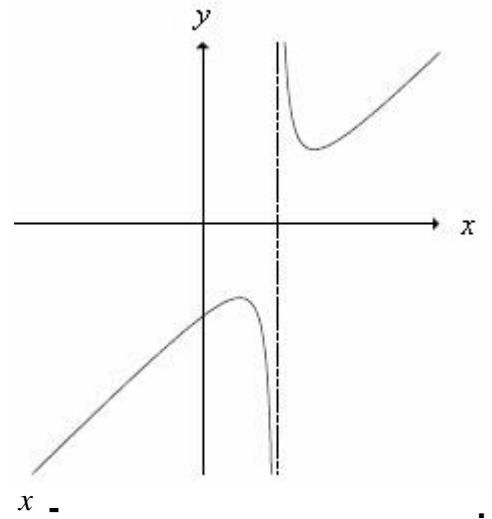


$$x \neq 2$$

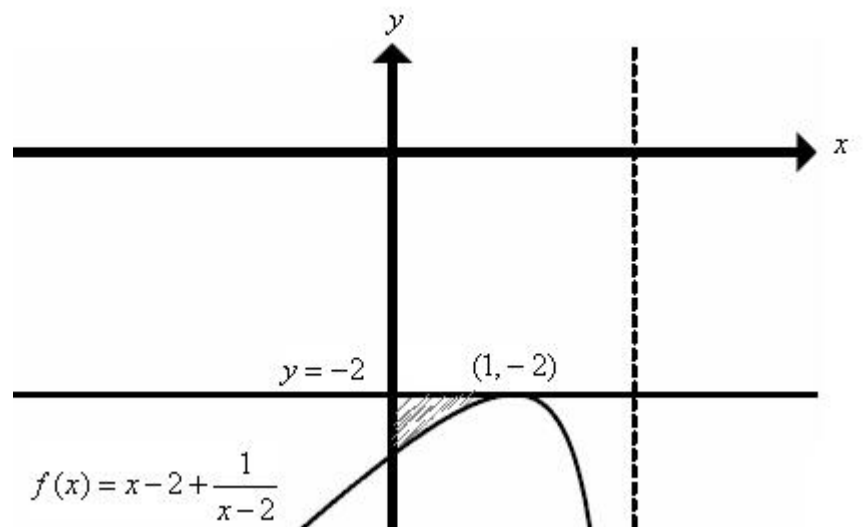
(2)

$$x = 2$$

(3)



$$y = -2$$



:

$$S = \int_0^1 \left(-2 - \left(x - 2 + \frac{1}{x-2}\right)\right) dx = \int_0^1 \left(-x - \frac{1}{x-2}\right) dx$$

$$S = \left[-\frac{x^2}{2} - \ln|x-2|\right]_0^1$$

$$S = \left(-\frac{1^2}{2} - \ln|1-2|\right) - \left(-\frac{0^2}{2} - \ln|0-2|\right)$$

$$S = (-0.5 - \ln 1) - (-0 - \ln 2)$$

$$S = \boxed{\ln 2 - 0.5}$$

$\ln 2 - 0.5$  :

..