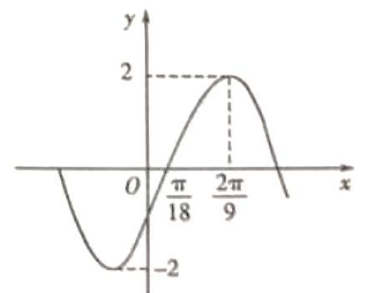


!!7!

线

20200927



! $C:(x-1)^2 + (y-2)^2 = 25$ $l:(2m-1)x + (m-1)y - 7m + 4 = 0$

l (1,3)

C y $4\sqrt{6}$

l 上 C 直

l C $(l: 2x + y - 5 = 0)$

A $l: x + y - \sqrt{2} = 0$ $(x^2 + y^2 = 1)$ $(PAQ) 90^\circ$

A

$0, \sqrt{2}$ $1, \sqrt{2} - 1$ $\sqrt{2}, 0$ $\sqrt{2}, 1, 1$

$\triangle ABC$ (A, B, C) $(\sqrt{3}a = 2c \sin A)$ $(0 < C < \frac{\pi}{2})$ $(b = 4)$

$C = \frac{\pi}{3}$ $\sin A = 2 \cos B \sin C$ $(\triangle ABC)$

$c = \frac{7}{2}$ $\cos B = \frac{1}{7}$ $\triangle ABC$ $2\sqrt{3}$ 4

究 $($ $($! $($ 究 $($ 究 $($ 究

$(2)x + (1)y - 6 - 3 = 0$

$y = 4x$ 上 $x + y - 1 = 0$ 直 $P(3, 2)$

全 3 $($ $($ 外

$($ 经

$(A(0, 1), B(0, 3))$ P PA $PB(0)$ P $($

$\frac{1}{2}$ P

! (ABC) $(B = \frac{\pi}{3})$ $(D \in BC)$ $(E \in AD)$ $($

$AE = 8$ $(AC = 4\sqrt{10})$ $(CED = \frac{\pi}{4})$ (CE)

$CD = 5$ $(\cos \angle DAB)$



! (! !

(

! ABC (A, B, C ($a \cos B \frac{1}{2} b c$

A
 ABC R ($\frac{b^2 + c^2 - bc}{4R^2}$

l (2,1)

$l \equiv$ (l k

$l = x$ A (y B ($\triangle AOB$ S (O (

S (l

$f(x) = \sqrt{3} \sin x \cos x + 3 \cos^2 x - \frac{1}{2} = 0$ ($f(x) = \frac{-}{2}$

$f(x) = 3 \sin^2 \frac{x}{2} - \sqrt{3} m [f(\frac{x}{8} - \frac{x}{12}) - 1] - m - 2$ $x \in [0, 2\pi]$ (定 m

! ABC (A, B, C) ($\vec{m} = (\cos B, 2\cos^2 \frac{C}{2} - 1)$) ($\vec{n} = (c, b - 2a)$) $\vec{m} \cdot \vec{n}$

$$D \in AB \iff \frac{\overline{AD}}{\overline{DB}} = \frac{|\overline{CD}|}{\sqrt{7}} = c - 2\sqrt{3} \iff ABC$$

$$C: (1-a)x^2 + (1-a)y^2 - 4x - 8ay = 0 \quad a \in \mathbf{R}$$

$a \in \mathbf{R}$;
 $\exists a \in \mathbf{R}$ C
 C (a)

xOy ($C_1: x^2 + y^2 = 4$ $C_2: x^2 + y^2 = 4$)
 l_1 $A(2,0)$ (l_1 C_1 直 (l_1)
 l_2 $B(4,0)$ (l_2 C_2 $2\sqrt{3}$) (l_2)
 l_3 $x = \frac{5}{2}$ (l_3 P (P 外 于直 l_4 l_5)
 上 C_1 C_2 直 (l_4 C_1 上 l_5 C_2 直

!!7!

线

7

7

(

! (

!

究

()

(x - 1)^2 (y - 4)^2 = 8

(

1 - x^2 - y^2

究(

$\frac{14}{3}y - \frac{5}{3}$

究

0

(

! 4\sqrt{2}

究

$$k > 0 \quad (l, y) = (k(x-2), \frac{1-2k}{k}y - 1 - 2k)$$

$$l \equiv \left(\frac{1-2k}{k}, 0 \right), \quad k > 0$$

$$(l, k) = [0, \infty)$$

$$l \equiv (l, y) = (1 - m(x-2), m) \quad m > 0$$

$$l \quad A \left(\frac{1-2m}{m}, 0 \right), B(0, 1-2m)$$

$$\frac{1-2m}{m} > 0, \quad m > 0$$

$$1-2m > 0,$$

$$S \quad \frac{1}{2} |OA| |OB| = \frac{1}{2} \left| \frac{1-2m}{m} \right| |1-2m| = \frac{1}{2} \frac{(1-2m)^2}{m}$$

$$\frac{1}{2} 4m \cdot \frac{1}{m} = 4 \quad \frac{1}{2} 2\sqrt{4m \cdot \frac{1}{m}} = 4 \quad \frac{1}{2} 4 \cdot 4 = 4$$

$$2\sqrt{m} \cdot \frac{1}{\sqrt{m}} = m \cdot \frac{1}{2}$$

$$m \cdot \frac{1}{2} = S_{\min} = 4 \quad l \quad x^2 + y^2 = 0$$

$$f(x) = \sqrt{3} \sin\left(2x - \frac{\pi}{3}\right) - 1$$

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

$$f(x) = \sqrt{3} \sin\left(4x - \frac{\pi}{3}\right) - 1 \quad 4x - \frac{\pi}{3} = k\pi, k \in \mathbb{Z} \quad x = \frac{k\pi}{4} + \frac{\pi}{12}, k \in \mathbb{Z}$$

$$\left(\frac{k\pi}{4} + \frac{\pi}{12}, 1\right), k \in \mathbb{Z}$$

$$3\sin^2 \frac{x}{2} - 3m \sin \frac{x}{2} - m - 2 = 0 \quad \sin \frac{x}{2} \in [0, 1] \quad m = \frac{3\sin^2 \frac{x}{2} - 2}{3\sin \frac{x}{2} - 1}$$

$$t = 3\sin \frac{x}{2} - 1 \quad t \in [1, 4] \quad \sin \frac{x}{2} = \frac{t+1}{3}$$

$$y = \frac{3 \cdot \frac{1}{9}(t+1)^2 - 2}{t} = \frac{t^2 - 2t + 5}{3t} = \frac{1}{3}\left(t + \frac{5}{t}\right) \quad t \in [1, 4]$$

$$t = 1 \quad (y_{\min}) = 2 \quad m = 2$$

$$t = \sin \frac{x}{2}, t \in [0, 1] \quad y = 3t^2 - 3mt - m - 2 = 0$$

$$\begin{aligned} \frac{m}{2} &= 0 \quad (m=0) \quad (y_{\min}=y(0)) \quad m^2=0 \quad (m=2) \\ 0 &= \frac{m}{2} - 1 \quad (0=m^2) \quad (y_{\min}=y(\frac{m}{2})) \quad 3\frac{m^2}{4} - 3m\frac{m}{2} + m^2 = 0 \quad (\\ \frac{m}{2} &= 1 \quad (m=2) \quad (y_{\min}=y(1)) \quad 3 - 3m + m^2 = 0 \quad (m = \frac{1}{4} \\ & \quad m = 2 \end{aligned}$$

!

$$\begin{aligned} \vec{m} \cdot \vec{n} &= 0 \quad (c \cos B - 2 \cos^2 \frac{C}{2} = 1 - b^2 - 2a^2 = 0) \quad (c \cos B = \cos C - b^2 - 2a^2 = 0) \\ \sin C \cos B &= \cos C - \sin B - 2 \sin A = 0 \quad (\sin B = C - 2 \sin A \cos C) \\ \sin A &= 2 \sin A \cos C - \sin A = 0 \quad (\cos C = \frac{1}{2}) \quad (C = 0, \\ C &= \frac{\pi}{3} \end{aligned}$$

$$\begin{aligned} \overline{AD} &= \overline{DB} \quad (D \text{ is midpoint of } AB) \quad \overline{CD} = \frac{1}{2} \overline{CA} + \frac{1}{2} \overline{CB} \\ \overline{CD}^2 &= \frac{1}{4} \overline{CA}^2 + \frac{1}{4} \overline{CB}^2 + \frac{1}{2} \overline{CA} \cdot \overline{CB} \quad |\overline{CD}| = \sqrt{7} \quad (C = \frac{\pi}{3} \\ 7 &= \frac{1}{4} b^2 + \frac{1}{4} a^2 + \frac{1}{2} ab \cos C \quad b^2 + a^2 - ab = 28 \\ c^2 &= a^2 + b^2 - 2ab \cos C \quad c = 2\sqrt{3} \quad b^2 + a^2 - ab = 12 \\ 7 &= ab - 8 \\ S_{ABC} &= \frac{1}{2} ab \sin C = 2\sqrt{3} \end{aligned}$$

$$\begin{aligned} a - 1 &= (x - 2y = 0) \\ a - 1 &= (x - \frac{2}{1-a} = y - \frac{4a}{1-a} = \frac{4 - 16a^2}{1-a^2}) \\ \therefore \frac{4 - 16a^2}{1-a^2} &= 0 \quad (a = 1) \end{aligned}$$

$$x^2 - y^2 - 4x + a x^2 - y^2 - 8y = 0$$

$$\begin{aligned} \therefore a &= (\\ x^2 - y^2 - 4x &= 0 \quad (x = 0) \quad x = \frac{16}{5} \\ x^2 - y^2 - 8y &= 0 \quad (y = 0) \quad y = \frac{8}{5} \end{aligned}$$

$$C = A(0,0) \quad B(\frac{16}{5}, \frac{8}{5})$$

$$a = (C)$$

C ((AB

$$AB \quad x \frac{8}{5}^2 \quad y \frac{4}{5}^2 \quad \frac{16}{5} \quad \frac{2}{1-a} \frac{8}{5} \quad \left(\quad a \frac{1}{4} \right)$$

$$\frac{4a}{1-a} \frac{4}{5} \quad \frac{4}{1-a^2} \frac{16}{5}$$

$$l_1 \quad \equiv \quad (\quad l_1 \quad x \quad 2($$

$$l_1 \quad (\quad l_1 \quad y \quad k(x-2) \quad kx \quad y \quad 2k \quad 0$$

$$\frac{|4k-5-2k|}{\sqrt{k^2-1}} \quad 2(\quad k \quad \frac{21}{20}($$

$$l_1 \quad y \quad \frac{21}{20}(x-2)(\quad 21 \quad 20 \quad 42 \quad 0$$

$$(\quad l_1 \quad x \quad 2 \quad 21 \quad 20 \quad 42 \quad 0$$

$$l_2 \quad (\quad l_2 \quad y \quad k(x-4)(\quad kx \quad y \quad 4k \quad 0$$

$$(\quad C_2 \quad l_2 \quad d \sqrt{2^2 - \frac{2\sqrt{3}}{2}^2} \quad 1$$

$$\text{全} (\quad \frac{|3k-1-4k|}{\sqrt{k^2-1}} \quad 1(\quad k \quad 0 \quad k \quad \frac{7}{24}($$

$$l_2 \quad y \quad 0 \quad y \quad \frac{7}{24}(x-4)(\quad y \quad 0 \quad 7x \quad 24y \quad 28 \quad 0$$

$$(\quad l_4 \quad l_5 \quad (\quad l_4 \quad k(\quad l_5 \quad \frac{1}{k}$$

$$P \quad \frac{5}{2}, n (\quad l_4 \quad l_5 \quad y \quad n \quad k \quad x \quad \frac{5}{2} \quad y \quad n \quad \frac{1}{k} \quad x \quad \frac{5}{2} ($$

$$l_4: kx \quad y \quad n \quad \frac{5}{2}k \quad 0(\quad l_5: \frac{1}{k}x \quad y \quad n \quad \frac{5}{2k} \quad 0$$

$$l_4 \quad C_1 \quad \text{上} \quad l_5 \quad C_2 \quad \text{直} (\quad \text{直} ($$

$$C_1 \quad l_4 \quad \text{上} \quad C_2 \quad l_5 \quad \text{直} ($$

$$\frac{|4k-5-n-\frac{5}{2}k|}{\sqrt{k^2-1}} \quad \frac{|3}{k}-1-n-\frac{5}{2k}|$$

$$\sqrt{\frac{1}{k^2}-1} ($$

$$\frac{5}{2} \quad n \quad k \quad \frac{21}{2} \quad n \quad \frac{1}{2} \quad n \quad k \quad n \quad \frac{1}{2} \quad \frac{1}{2} \quad n$$

$$k \quad \text{外} (\quad \frac{1}{2} \quad n \quad 0(\quad n \quad \frac{1}{2}($$

$$l_3 \quad P \quad (\quad \frac{5}{2}, \frac{1}{2}$$