۱۹/۲۵

صالح صالحی — بنام آنکه جان را فکرت آموخت — دوازدهم تجربی B _ کلینیک ۱۲

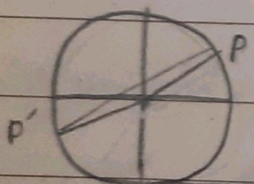
① ۲

$$\frac{-\frac{\sqrt{3}}{2}a-\frac{\sqrt{3}}{2}b}{-\frac{1}{2}a+\frac{1}{2}b}=-\frac{\sqrt{3}}{3}\to\frac{-\frac{\sqrt{3}}{2}(a+b)}{-\frac{1}{2}(a-b)}=-\frac{\sqrt{3}}{3}\to\frac{a+b}{a-b}=-\frac{1}{3}$$

$$\to 3a+3b=b-a\to 4a=-2b\to -2a=+b\to\frac{b}{a}=\frac{-2a}{a}=-2$$

② ۲

$$\cos P=\frac{1}{2}\xrightarrow{P<\frac{\pi}{2}}P=\frac{\pi}{3}\to y=\frac{\sqrt{3}}{2}\qquad \frac{\pi}{3}-\frac{7\pi}{6}=-\frac{5\pi}{6}=\frac{7\pi}{6}$$



$$P'\left|\begin{matrix}-\frac{\sqrt{3}}{2}\\-\frac{1}{2}\end{matrix}\right.\to \text{فاصله } P',P=\sqrt{\left(\frac{1}{2}-\left(-\frac{\sqrt{3}}{2}\right)\right)^2+\left(\frac{\sqrt{3}}{2}-\left(-\frac{1}{2}\right)\right)^2}=$$

$$\sqrt{2\left(\frac{1}{2}+\frac{\sqrt{3}}{2}\right)^2}=\left|\frac{1}{2}+\frac{\sqrt{3}}{2}\right|\sqrt{2}\to P_{\triangle OPP'}=1+1+\left(\frac{1}{2}+\frac{\sqrt{3}}{2}\right)\sqrt{2}$$

$$=2+\frac{1+\sqrt{3}}{\sqrt{2}}$$

$$\sqrt{\frac{1}{4}+\frac{3}{4}+\frac{2\sqrt{3}}{4}+\frac{1}{4}+\frac{3}{4}+\frac{2\sqrt{3}}{4}}$$

$$=\sqrt{\frac{8+4\sqrt{3}}{4}}=\sqrt{2+\sqrt{3}}\to \text{محیط}=2+\sqrt{2+\sqrt{3}}$$

این نحوه ساده کردن PP' در امتحان نهایی ممکنه جهت ایرادگیری بهتره اینجوری ننویسی !!

صحیح شده

(۳) $\frac{\pi}{9}\times\frac{180}{\pi}=20^\circ$

درجه	دقیقه
30°	$60'$
20°	$30'$

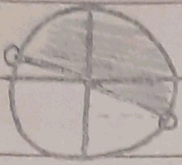
$\rightarrow 20^\circ 40'$ ۲

(۴) $\alpha=\left|\frac{11m}{2}-30h\right| \rightarrow 20=\left|\frac{11m}{2}-90\right|$

بار دوم $\rightarrow 20=\frac{11m}{2}-90 \rightarrow m=20$ ✓

بار اول $\rightarrow -20=\frac{11m}{2}-90 \rightarrow m=\frac{140}{11}$ ۲

(۵) $-\frac{\pi}{6}<x<\frac{5\pi}{6}$



$\rightarrow -\frac{1}{2}<\sin x\leq 1 \rightarrow -\frac{1}{2}<\frac{m-3}{5}\leq 1$ ۲

$\rightarrow -\frac{5}{2}<m-3\leq 5 \rightarrow \frac{1}{2}<m\leq 8 \rightarrow m=\left(\frac{1}{2},8\right]$

(۶) $\frac{\sin(\frac{\pi}{2}+\alpha)+k\cos(\frac{3\pi}{2}-\alpha)}{\cos(\pi-\alpha)+2\sin(\pi+\alpha)}=\frac{\cos\alpha-k\sin\alpha}{-\cos\alpha-2\sin\alpha}\xrightarrow{\div\cos\alpha}$ $15^\circ=\alpha$ ۲

$3=\frac{1-k\tan\alpha}{-1-2\tan\alpha}\xRightarrow{\tan\alpha=\frac{1}{4}} -3-\frac{3}{2}=1-\frac{k}{4}\rightarrow -\frac{11}{2}=-\frac{k}{4}\rightarrow k=22$

(۷) $\sin x,\cos x>0$ ←

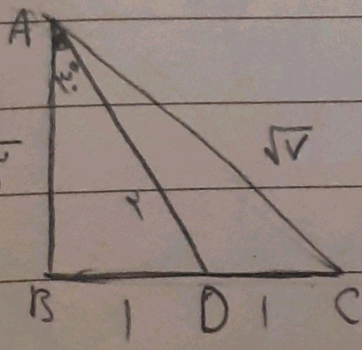
$\frac{\cot x+\cot x}{\tan x-2\tan x}=\frac{2\cot x}{-\tan x}=-2\times\cot^2 x=\frac{-2}{\tan^2 x}$ ۲

$\frac{1-\cos x}{1+\cos x}=\frac{\sin^2\frac{x}{2}}{\cos^2\frac{x}{2}}=\tan^2\frac{x}{2}=2\rightarrow \tan x=\frac{2\tan\frac{x}{2}}{1-\tan^2\frac{x}{2}}=\frac{2\sqrt{2}}{-1}=-2\sqrt{2}$

$\rightarrow\frac{-2}{\tan^2 x}=\frac{-2}{(2\sqrt{2})^2}=\frac{-2}{8}=\frac{-1}{4}$

(۸) $108\times\frac{\pi}{180}=\frac{3\pi}{5}$ $\quad \frac{P_A}{P_B}=\frac{\frac{9\pi}{10}}{\frac{3\pi}{5}}=\frac{9}{10}\times\frac{5}{3}=\frac{3}{2}\rightarrow\left(\frac{S_A}{S_B}\right)=\left(\frac{P_A}{P_B}\right)^2=\frac{9}{4}$ ۲

(۹)



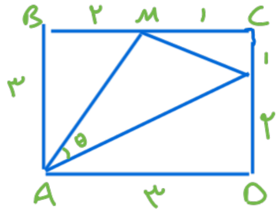
$S_{A\hat{B}C}=\sqrt{3}$

$AD=\frac{1}{\sin 30^\circ}\times 1=2 \quad AB=\sqrt{2^2-1^2}=\sqrt{3}$

$\frac{\sqrt{3}\times BC}{2}=\sqrt{3}\rightarrow BC=2 \quad AC=\sqrt{2^2+(\sqrt{3})^2}=\sqrt{7}$ ۲

$\sin C=\frac{2}{\sqrt{7}},\ \cos C=\sqrt{\frac{3}{7}}\rightarrow\sin 2C=2\sin C\cos C=2\times\frac{2}{\sqrt{7}}\times\frac{\sqrt{3}}{\sqrt{7}}=\frac{4\sqrt{3}}{7}$

$AN = AM \rightarrow AM^{۲} = (AB^{۲}) + (BM)^{۲} = ۲^{۲} + ۳^{۲} = ۱۳ \rightarrow AM = \sqrt{۱۳}$



$S_{ADN} = S_{ABM} = \frac{۲\times۳}{۲} = ۳$ و $S_{MCN} = \frac{۱\times۱}{۲}$

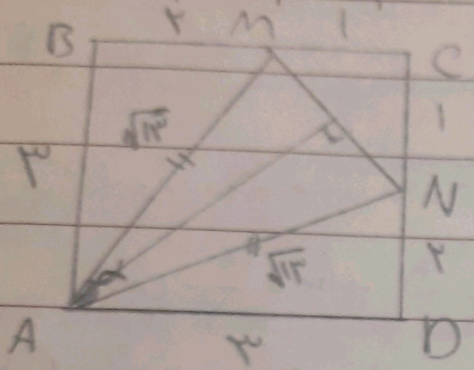
$\underbrace{S_{ADN}}_{۳} + \underbrace{S_{ABM}}_{۳} + \underbrace{S_{MCN}}_{\frac{۱}{۲}} + S_{AMN} = \underbrace{S_{ABCD}}_{۹} \rightarrow$

$S_{AMN} \rightarrow ۲٫۵$

$\frac{۱}{۲} \times \sqrt{۱۳} \times \sqrt{۱۳} \times \sin\theta = \frac{۵}{۲}$

$\sin\theta = \frac{۵}{۱۳}$

راه حل



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$AM = AN = \sqrt{۲^{۲}+۳^{۲}} = \sqrt{۱۳}$

$\sin\frac{\alpha}{۲} = \frac{۱}{\sqrt{۱۳}} , \cos\frac{\alpha}{۲} = \sqrt{\frac{۱۲}{۱۳}}$

$\sin\alpha = ۲\sin\frac{\alpha}{۲}\cos\frac{\alpha}{۲} = ۲ \times \frac{۱}{\sqrt{۱۳}} \times \sqrt{\frac{۱۲}{۱۳}} = \frac{۴\sqrt{۳}}{۱۳}$

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