A ۲ اسپ   تکلیف ۱۲   پرهام مقصی

Subject: Date :

$$\frac{a\sin\frac{4\pi}{3}+b\cos\frac{7\pi}{6}}{a\sin\frac{11\pi}{6}+b\cos\frac{\pi}{3}}=\frac{-a\frac{\sqrt3}{2}+-b\frac{\sqrt3}{2}}{-\frac{a}{2}+\frac{b}{2}}=\frac{-\frac{\sqrt3}{2}(a+b)}{-\frac12(a-b)}=\tan\frac{5\pi}{6} \quad (1)$$

$\sin(\pi+\frac{\pi}{3})$, $\cos(\pi+\frac{\pi}{6})$, $\sin(\pi+\frac{5\pi}{6})$, $\cos\frac{\pi}{3}$

$$\Downarrow \quad \frac{\sqrt3(a+b)}{(a-b)}=\frac{\sin\frac{5\pi}{6}}{\cos\frac{5\pi}{6}} \longrightarrow \frac{\sqrt3(a+b)}{(a-b)}=\frac{\frac12}{-\frac{\sqrt3}{2}} \Rightarrow -3(a+b)=a-b$$

$$-3a-3b=a-b \quad ; \quad -4a=2b \Rightarrow \boxed{\frac{b}{a}=-2}$$

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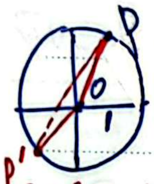
(2)



$P(\frac12, y)$

$P \Rightarrow \cos=\frac12 \Rightarrow$ زاویه $=60^\circ \Rightarrow \sin=y=\frac{\sqrt3}{2}$

خلاف جهت دایره مثلثاتی $\Rightarrow$ سمت راست $\Rightarrow 60^\circ-210^\circ=-150^\circ \to \sin=-\frac12$ ، $\cos=-\frac{\sqrt3}{2}$

$P'(-\frac{\sqrt3}{2}, -\frac12)$ محیط مثلث $\Rightarrow$ ۲شعاع $+PP'=2+\sqrt{(\Delta y)^2+(\Delta x)^2}=2+\sqrt{(\frac{\sqrt3}{2}+\frac12)^2+(\frac12+\frac{\sqrt3}{2})^2}$

$$\frac{4+\sqrt2+\sqrt6}{2} \Longleftarrow 2+\left(\frac{\sqrt3}{2}+\frac12\right)\sqrt2$$

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(3)

$\frac{\pi}{9}=\frac{180}{9}=20^\circ \longrightarrow \frac{20}{30}$ ساعت ۱ ساعت $=40$ min

متناسب ۱۲ ساعت $\to$ ۱ ساعت $\to 30^\circ$

$\longrightarrow$

$2:40$

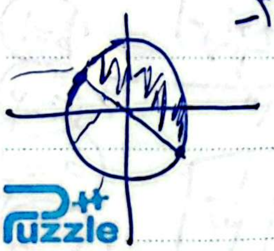
(4)

$$|5.5M-30H| \xrightarrow{\text{ساعت}=3} |5.5M-90|=20 \begin{cases} 5.5m-90=20 \\ 5.5m-90=-20 \end{cases}$$

بار دوم $\Rightarrow 5.5m=110 \to \boxed{m=20}$ بار اول $\Rightarrow 5.5m=70 \Rightarrow m=12.72$

15

(5)



$-30^\circ \leq m \leq 150^\circ$

$\left.\begin{array}{l} \min\sin \to -\frac12 \\ \max\sin \to 1 \end{array}\right\} -\frac12 \leq \frac{m-3}{5} \leq 1 \xrightarrow{\times5} -\frac52 \leq m-3 \leq 5$

$\xrightarrow{+3} \frac12 \leq m \leq 8 \Rightarrow$ ۱،۲،۳،۴،۵،۶،۷،۸ $\boxed{\text{۸ صحیح}}$

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Subject: $\cos 15^\circ$ $\qquad -k\sin 15$ $\qquad$ Date:

(۶)

$$\frac{\sin(\frac{\pi}{2}+15)+k\cos(\frac{3\pi}{2}-15)}{\underbrace{\cos(\pi-15)}_{-\cos 15}+2\underbrace{\sin(\pi+15)}_{-2\sin 15}}=3$$

$$\tan 15^\circ=\frac{25}{100}=\frac{1}{4}$$

$$\frac{\sin 15^\circ}{\cos 15^\circ}=\frac{1}{4}$$

یعنی می توان به جای $\sin 15$ عدد ۱ و به جای $\cos 15$ عدد ۴ را فرض کرد.*

$$\frac{4-k}{-4-2}=3\Rightarrow 4-k=-18\Rightarrow k=22$$

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(۷) $\cot=\frac{1}{\tan}$ *

کمان دو برابر نسبت به ۲ ← همه به جز $\sin$ ها منفی *

$$\frac{\cot x+\cot x}{\tan x+-2\tan x}=\frac{2\cot x}{-\tan x}=\frac{\frac{2}{\tan}}{\frac{-\tan}{1}}=\frac{2}{-\tan^2}=?$$

$$\frac{1-\cos x}{1+\cos x}=2\Rightarrow 1-\cos x=2+2\cos x\Rightarrow -1=3\cos x\Rightarrow \cos x=-\frac{1}{3}$$

$$\sin^2+\cos^2=1\Rightarrow \sin^2+\frac{1}{9}=1\xRightarrow{**}\sin=\frac{2\sqrt{2}}{3}$$

$$?=\frac{2}{-\frac{(\frac{2\sqrt{2}}{3})^2}{(-\frac{1}{3})^2}}=-\frac{1}{4}$$

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(۸)

$$\frac{108}{180}=\frac{Rad}{\pi}\Rightarrow Rad=\frac{3\pi}{5}$$

$$A\Rightarrow \frac{3\pi}{5}\times r_A \qquad B=\frac{9\pi}{10}\times r_B$$

طول دو کمان برابر $\Rightarrow \frac{3\pi}{5}\times r_A=\frac{9\pi}{10}\times r_B\rightsquigarrow r_A=1/5\, r_B$ $\qquad \frac{S_A}{S_B}=(1/5)^2=\frac{9}{4}$

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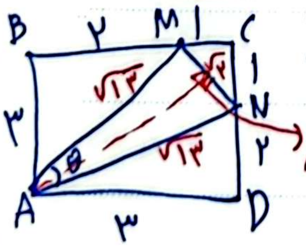
(۱۰)



MNC, AMC, AN

فیثاغورث $\Rightarrow \sqrt{29}$ ، $\sqrt{13}$ ، $\sqrt{13}$

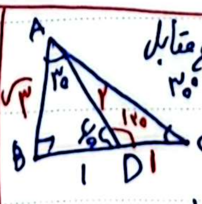
$$\sin\frac{\theta}{2}=\frac{\frac{\sqrt{2}}{2}}{\sqrt{13}}=\frac{\sqrt{2}}{2\sqrt{13}}$$

$$\sin 2x=2\cos x\sin x$$

$$\sin\theta=2\times\frac{\frac{\sqrt{50}}{2}}{\sqrt{13}}\times\frac{\sqrt{2}}{2\sqrt{13}}=\frac{5}{13}$$

$$AA'=\sqrt{13-\frac{1}{2}}=\sqrt{\frac{25}{2}}$$

(۹)



$\frac{\text{ضلع مقابل به } 30^\circ}{}=\frac{\sqrt{2}}{2}\Rightarrow AD=2$

$\frac{\text{ضلع مقابل به } 60^\circ}{}=\frac{\sqrt{3}}{2}$ وتر $\Rightarrow AB=\sqrt{3}$

$$S_\Delta=\frac{1}{2}\times 1\times\sqrt{3}\times\sin 90=\sqrt{3}$$

$$\frac{\sqrt{3}\times BC}{2}=\sqrt{3}\Rightarrow BC=2\Rightarrow CD=1$$

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

$$\frac{4\sqrt{3}}{7}$$

$$AC^2=\underbrace{AB^2}_{3}+\underbrace{BC^2}_{1}\Rightarrow AC=\sqrt{7}$$