نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ..... کلاس .....

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$$\frac{a\sin\frac{4\pi}{3}+b\cos\frac{7\pi}{4}}{a\sin\frac{11\pi}{4}+b\cos\frac{\pi}{3}} = \frac{a\frac{\sqrt{3}}{2}-b\frac{\sqrt{2}}{2}}{\frac{-a}{2}+\frac{b}{2}} = \frac{a\sqrt{2}-b\sqrt{2}}{-a+b} = \frac{-\sqrt{2}}{1}$$

$\tan\frac{5\pi}{4} = \frac{-\sqrt{2}}{2}$

$$\Rightarrow \frac{\sqrt{2}(a-b)}{a-b} = \frac{-\sqrt{2}}{2} \Rightarrow 2a-2b = a-b$$

$$\Rightarrow 2a = 2b \Rightarrow \frac{b}{a} = 1$$

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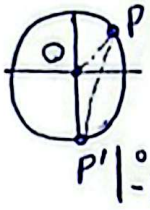
$\left(\frac{1}{2}\right)^2 + y^2 = 1 \Rightarrow y^2 = \frac{3}{4} \Rightarrow y = \frac{\sqrt{3}}{2} \rightarrow P' = 90+210 = 270'$



$PP' = \sqrt{\left(\frac{1}{2}-0\right)^2+\left(\frac{\sqrt{3}}{2}-(-1)\right)^2} \Rightarrow P'P = \sqrt{2+\sqrt{3}}$

محیط $= OP+OP'+PP' = 1+1+\sqrt{2+\sqrt{3}} = 2+\sqrt{2+\sqrt{3}}$

۳

$\frac{\pi}{9} = \frac{180}{9} = 20' \rightarrow$ برعکس اینکه دقیقه ساعت ۲ برابر درجه چرخش ساعت است

پس ساعت $21\frac{4}{0}'$ است

$20\times 2 = 40$

۴

$\left|\frac{11M}{2}-30H\right| = \alpha = 20 \Rightarrow \frac{11M}{2}-30H = \pm 20 \rightarrow$ ساعت ۳ است

$\Rightarrow \frac{11M}{2}-90 = +20 \rightarrow 110 \rightarrow$ بار دوم

$\frac{11M}{2}-90 = -20 \rightarrow 70 \rightarrow$ بار اول

$\Rightarrow \frac{11M}{2} = 110 \Rightarrow M = 20$

پس از ۳ گذشت ۲۰ دقیقه

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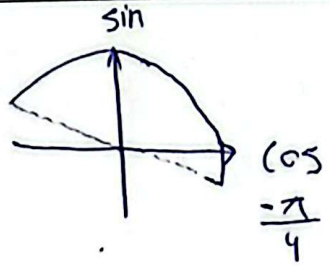

$\sin\frac{-\pi}{4} = \frac{-1}{2}$ ، $\sin\frac{\pi}{2} = 1$

$\frac{-1}{2} < \frac{m-3}{5} \leq 1 \rightarrow -2/5 < m-3 \leq 5$

$0/5 < m \leq 8$

۶

$$\frac{\sin(10^\circ)+k\cos(270^\circ)}{\cos(180^\circ)+2\sin(180^\circ)}=\frac{+\cos(10)-k\sin(10)}{-\cos 10-2\sin(10)}$$

تقسیم $\cos 10$

$$\frac{1-k\tan(10)}{-1-2\tan 10}=\frac{1-\frac{k}{4}}{-10}=2\Rightarrow 1-\frac{k}{4}=-40$$

$$\Rightarrow \frac{-k}{4}=-41\Rightarrow k=44$$

۴

$$\frac{\tan(\frac{\pi}{2}-x)-\cot(\pi-x)}{\cot(\frac{3\pi}{2}-x)+2\tan(4\pi-x)}=\frac{\cot x-(-\cot x)}{\tan x-2\tan x}=-2\frac{\cot x}{\tan x}=-2\cot^2 x$$

۲

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

$$\tan^2 x+1=\frac{1}{\cos^2 x}\Rightarrow \tan^2 x+1=\frac{1}{(\frac{-1}{3})^2}=9\Rightarrow \tan x=2\sqrt{2}\Rightarrow -2\cot^2 x=\frac{-1}{4}$$

۲

$$\frac{\alpha}{180}=\frac{\text{rad}}{\pi}\Rightarrow\frac{108}{180}=\frac{\text{rad}}{\pi}\Rightarrow\alpha=\frac{3\pi}{5}\rightarrow A\qquad \alpha=\frac{9\pi}{10}\rightarrow B$$

$$L=\alpha r\Rightarrow L_A=L_B\Rightarrow\frac{3\pi}{5}\cdot r_A=\frac{9\pi}{10}\cdot r_B\Rightarrow\frac{r_A}{r_B}=\frac{\frac{9\pi}{10}}{\frac{3\pi}{5}}=\frac{3}{2}$$

$$\frac{S_A}{S_B}=\left(\frac{r_A}{r_B}\right)^2=\left(\frac{3}{2}\right)^2=\frac{9}{4}$$

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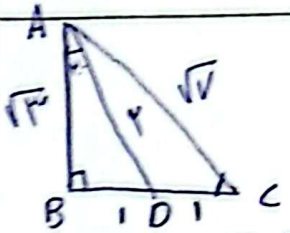

$$\sin C=\frac{\text{مقابل}}{\text{وتر}}=\frac{BD}{AD}\quad AD=2\Rightarrow AB=\sqrt{3}$$

$$S=\frac{1}{2}AB\cdot BC=\sqrt{3}\Rightarrow BC=2\Rightarrow AC^2=2^2+(\sqrt{3})^2\Rightarrow AC=\sqrt{7}$$

$$\sin C=\frac{\sqrt{12}}{\sqrt{7}}=\frac{2\sqrt{3}}{\sqrt{7}},\quad \cos C=\frac{2}{\sqrt{7}}$$

$$\sin 2C=2\sin C\cdot\cos C=2\cdot\frac{2\sqrt{3}}{\sqrt{7}}\times\frac{2}{\sqrt{7}}\Rightarrow\frac{8\sqrt{3}}{7}$$

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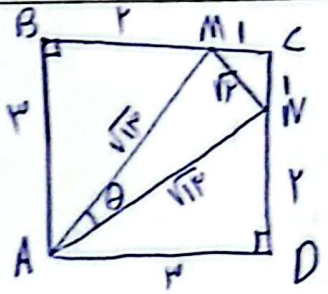

$$MN^2=AM^2+AN^2-2MN\cdot AN(\cos\theta)$$

$$2=13+13-24\cos\theta\Rightarrow 24\cos\theta=24$$

$$\Rightarrow\cos\theta=\frac{24}{24}=\frac{12}{13}\quad \cos^2\theta+\sin^2\theta=1$$

$$\Rightarrow\sin\theta=\frac{5}{13}\quad \frac{144}{169}$$

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