۱۹

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

۱

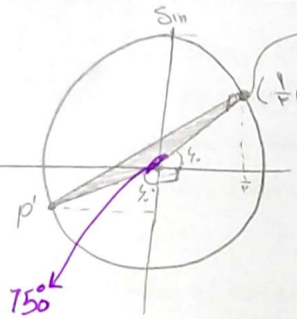
$$\frac{a\sin(\pi+\frac{\pi}{3})+b\cos(\pi+\frac{\pi}{6})}{a\sin(2\pi-\frac{\pi}{6})+b\cos\frac{\pi}{3}}=\frac{-a\sin\frac{\pi}{3}-b\cos\frac{\pi}{6}}{-a\sin\frac{\pi}{6}+b\cos\frac{\pi}{3}}=\tan(\pi-\frac{\pi}{6})=-\tan\frac{\pi}{6}$$

$$\frac{-a(\frac{\sqrt{3}}{2})-b(\frac{\sqrt{3}}{2})}{-a(\frac{1}{2})+b(\frac{1}{2})}=-\frac{1}{\sqrt{3}}\rightarrow\frac{\sqrt{3}a}{2}+\frac{\sqrt{3}b}{2}=\frac{b}{2}-\frac{a}{2}\rightarrow 2b=-6a\rightarrow b=-3a$$

$$\frac{b}{a}=\frac{-3}{1}=-3$$ ✓

(۲)

۲



$$P'\left(-\frac{\sqrt{3}}{2},\frac{1}{2}\right)$$

$$\text{محیط}=1+1+\frac{\sqrt{2}+\sqrt{6}}{2}=\frac{4+\sqrt{2}+\sqrt{6}}{2}$$ ✓

$$\text{فاصله دو نقطه}\rightarrow\sqrt{\left(\frac{1+\sqrt{3}}{2}\right)^2+\left(\frac{1+\sqrt{3}}{2}\right)^2}=\sqrt{2\left(\frac{1+\sqrt{3}}{2}\right)^2}=\left(\frac{1+\sqrt{3}}{2}\right)\sqrt{2}$$

(۲)

۳

$$\frac{\pi}{9}=20^\circ\qquad 60'=1h\rightarrow 30^\circ$$

$$40'\rightarrow 20^\circ$$

ساعت $2:40$ خواهد بود ✓

(۲)

۴

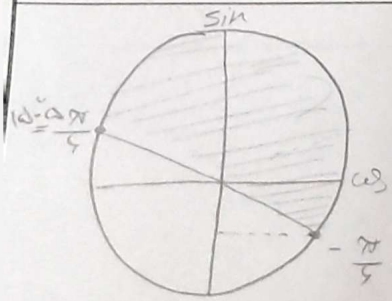
$$\left|\frac{11}{2}M-30\right|=25\rightarrow\frac{11}{2}M-90=30\rightarrow\frac{11}{2}M=120\rightarrow M=21'\rightarrow$$ بار دوم ✓

$$\frac{11}{2}M-90=-30\rightarrow\frac{11}{2}M=60\rightarrow M=\frac{120}{11}'\rightarrow$$ بار اول

$$M\simeq 12,7$$

(۲)

۵



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

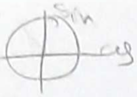
$$-2,5<m\leq 8$$

$-2,5<m-3\leq 5$

اعداد صحیح $\rightarrow 3,4,5,6,7,8$

$-2,5<m\leq 8$ ← ۸ عدد صحیح

(۱)



$$\frac{\sin(\frac{\pi}{۲}+۱۵°)+k\cos(\frac{۳\pi}{۲}-۱۵°)}{\cos(\pi-۱۵°)+۲\sin(\pi+۱۵°)}=\frac{\cos ۱۵°-k\sin ۱۵°}{-\cos ۱۵-۲\sin ۱۵}\xrightarrow{\div\cos ۱۵°}$$

$$\frac{۱-k\tan ۱۵°}{-۱-۲\tan ۱۵°}=۳\to\frac{۱-\frac{۱}{۴}k}{-۱/۵}=۳\to -۴/۵=۱-\frac{۱}{۴}k$$

$$+۵/۵=+\frac{۱}{۴}k$$

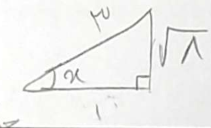
$$\boxed{k=۲۲}$$

۶

$$\frac{\tan(\frac{\pi}{۲}-x)-\cot(\pi-x)}{\cot(\frac{۳\pi}{۲}-x)-۲\tan(۲\pi-x)}\to\frac{\cot x+\cot x}{\tan x-۲\tan}=\frac{۲\cot x}{-\tan x}=\frac{۲(+\frac{۱}{\sqrt{۸}})}{-\frac{\sqrt{۸}}{۱}}$$

$$x-\cos x=x+۲\cos x\to -۳\cos x=۱\to\cos x=\left(-\frac{۱}{۳}\right)$$

$$-\frac{۲}{۸}=-\frac{۱}{۴}$$



۷

$$\frac{۱۰۸}{۱۸۰}=\frac{R}{\pi}\to R=\frac{۶\pi}{۱۰}=\frac{۳\pi}{۵}\xrightarrow{\text{طول کمان}} l_A=\frac{۳\pi}{۵}r_A$$

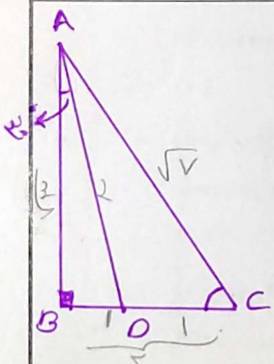
طول کمان $\Leftarrow r\theta=l$

$$l_A=l_B=\frac{۳\pi}{۲}r_B=\frac{۳\pi}{۵}r_A\to\frac{۳}{۲}r_B=r_A$$

$$\frac{S_A}{S_B}=\frac{r_A^۲\pi}{r_B^۲\pi}=\frac{\frac{۹}{۴}r_B^۲}{r_B^۲}$$

$$\Leftarrow\boxed{\frac{۹}{۴}}$$

۸



$S_{ABC}=\sqrt{۳}$ $S_{ABC}=S_{ABD}+S_{ADC}$ $\sin ۲C=?$

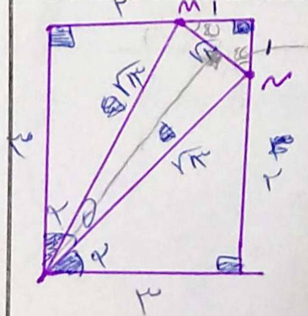
$$\frac{BD\times AB}{۲}+\frac{AB\times DC}{۲}=\sqrt{۳}\to\sqrt{۳}(۱+DC)=۲\sqrt{۳}$$

$$\boxed{DC=۱}$$

$$\sin C=\frac{\sqrt{۳}}{\sqrt{۷}}\quad\cos C=\frac{۲}{\sqrt{۷}}$$

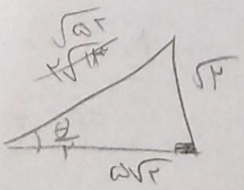
$$\sin ۲C=۲\sin C\cos C\to ۲\left(\frac{\sqrt{۳}}{\sqrt{۷}}\right)\left(\frac{۲}{\sqrt{۷}}\right)=\boxed{\frac{۴\sqrt{۳}}{۷}}$$

۹



$\sin\theta=?$

$$\sin\frac{\theta}{۲}=\frac{\sqrt{۲}}{۲\sqrt{۱۳}}$$



$$\sin\theta=۲\sin\frac{\theta}{۲}\cos\frac{\theta}{۲}$$

$$\sin\theta=۲\left(\frac{\sqrt{۲}}{۲\sqrt{۱۳}}\right)\left(\frac{۵\sqrt{۲}}{۲\sqrt{۱۳}}\right)$$

$$\boxed{\sin\theta=\frac{۵}{۱۳}}$$

۱۰