Date: Sub:

هاشم کوشیان — کیلینر شاه ۱۲ — کلاس دوازدهم دفتر A

۱۲.۴.۸.۱

(۱)

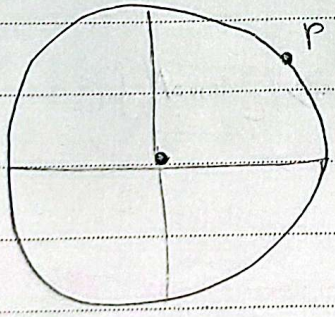
$$\frac{a\sin\frac{14\pi}{3}+b\cos\frac{7\pi}{4}}{a\sin\frac{11\pi}{4}+b\cos\frac{\pi}{3}}=\tan\frac{5\pi}{4}\qquad \frac{b}{a}=?\Rightarrow$$

$$\frac{-\frac{\sqrt{3}}{2}a-\frac{\sqrt{2}}{2}b}{\frac{1}{2}a+\frac{1}{2}b}=-1\Rightarrow -\frac{\sqrt{3}}{2}a-\frac{\sqrt{3}}{2}b=-\frac{1}{2}a-\frac{1}{2}b$$

$$\Rightarrow \frac{\sqrt{3}-1}{2}a=\frac{1-\sqrt{3}}{2}b\Rightarrow \frac{b}{a}=\frac{\frac{\sqrt{3}-1}{2}}{\frac{1-\sqrt{3}}{2}}=\frac{\sqrt{3}-1}{1-\sqrt{3}}$$

$$\Rightarrow \frac{\sqrt{3}-1}{1-\sqrt{3}}\times\frac{1+\sqrt{3}}{1+\sqrt{3}}=\frac{\cancel{4}+3-1\cancel{-\sqrt{3}}}{-2}=\frac{2}{-2}=-1$$

(۲)



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۱۳

$\frac{\pi}{18} \times \frac{180}{\pi} = 10^\circ \Rightarrow$ عقربه دقیقه شمار $\Rightarrow 40^\circ$

۲ دیم این ساعت شمار

حرکت می‌کند

$\Rightarrow \frac{10}{6} = 6/\sim$ ساعت $\Rightarrow$ **۱۰:۶**

تقریبا ۷ دقیقه

جلو رفته

۱۴

۱۵

$-\frac{\pi}{6} < x \leq \frac{5\pi}{6} \Rightarrow -\frac{1}{2} < \sin x \leq 1 \Rightarrow -\frac{1}{2} < \frac{m-2}{3} \leq 1$

$\Rightarrow -\frac{3}{2} < m-2 \leq 3 \Rightarrow -\frac{1}{2} < m \leq 5 \Rightarrow$ شامل **۷ عدد صحیح**

۱۶

$$\frac{\sin(\frac{\pi}{2}+15^\circ) + k\cos(\frac{3\pi}{2}-15^\circ)}{\cos(\pi-15^\circ) + 2\sin(\pi+15^\circ)} = 3 \Rightarrow \text{صورت مخرج} \Rightarrow \frac{\cos 15^\circ - k\sin 15^\circ}{-\cos 15^\circ - 2\sin 15^\circ} = 3$$

تقسیم بر $\cos 15^\circ$

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$$\frac{1-0.25k}{-1-\sqrt{3}} = 3 \Rightarrow 1-0.25k = -4.5$$

$$\frac{0.5}{-1.0}$$

$$0.5 = 0.25k$$

$$\boxed{k = 2}$$

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

$$\cos\alpha = -\frac{1}{3} \Rightarrow 1-\cos^2\alpha = \sin^2\alpha \Rightarrow 1-\left(-\frac{1}{3}\right)^2 = \frac{8}{9} \Rightarrow \sin^2\alpha \Rightarrow$$

$$\sin\alpha = \pm\frac{2\sqrt{2}}{3}$$ چون $\Rightarrow$ در ناحیه‌ی $\sin(+)$

در ناحیه‌ی $\Rightarrow \frac{\cot\alpha + \cot\alpha}{\tan\alpha - 2\tan\alpha} = \frac{2\cot\alpha}{-\tan\alpha} = \frac{-2}{\tan^2\alpha} \Rightarrow \frac{-2}{\left(\frac{2\sqrt{2}}{3}\right)^2}$

$$= -\frac{2}{8} = \boxed{-\frac{1}{4}}$$

۱۸

$$10\Lambda^\circ \Rightarrow 10\Lambda \times \frac{\pi}{180} = \frac{3\pi}{5} \Rightarrow \frac{3\pi}{5} r_A = \frac{9\pi}{10} r_B$$

$$\frac{r_A}{r_B} = \frac{\frac{9\pi}{10}}{\frac{3\pi}{5}}$$

$$\frac{S_A}{S_B} = \frac{\pi r_A^2}{\pi r_B^2} \Rightarrow \frac{\left(\frac{9\pi}{10}\right)^2}{\left(\frac{3\pi}{5}\right)^2} = \frac{\frac{81\pi^2}{100}}{\frac{9\pi^2}{25}} \times \frac{25}{9\pi^2}$$

$$= \boxed{\frac{1}{4}}$$

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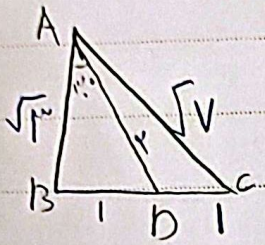


$\Rightarrow S_{ABC} = \sqrt{۳} \Rightarrow \overline{AB} \Rightarrow \sin ۳۰^\circ = \frac{۱}{۲} = \frac{BD}{AD} = \frac{۱}{AD}$

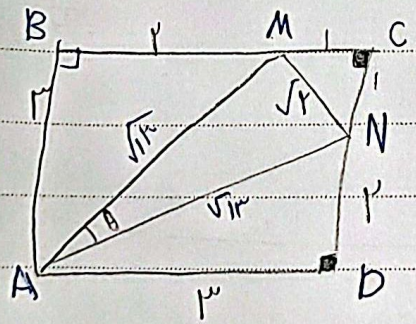
$\Rightarrow AD = ۲ \Rightarrow \cos ۳۰^\circ = \frac{\sqrt{۳}}{۲} = \frac{\frac{AB}{۲}}{AD} \Rightarrow AB = \sqrt{۳}$

$\Rightarrow \frac{\sqrt{۳} \times (۱+m)}{۲} = \sqrt{۳} \Rightarrow ۱+m = ۲ \Rightarrow m = ۱ = DC$

$\Rightarrow (AB)^۲ + (BC)^۲ = (AC)^۲ \Rightarrow \sqrt{(\sqrt{۳})^۲ + (۲)^۲} = \sqrt{۷} = AC$

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

۱۰



$MN = \sqrt{(۱)^۲ + (۱)^۲} = \sqrt{۲}$

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

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

$S_{\triangle MNC} = \frac{۱ \times ۱}{۲} = \frac{۱}{۲}$ ① $\quad S_{\triangle AND} = \frac{۲ \times ۳}{۲} = ۳$ ③

$S_{\triangle BMA} = \frac{۲ \times ۳}{۲} = ۳$ ② $\quad ۳ + ۳ + \frac{۱}{۲} + m = ۹$

$\sin\theta = \frac{\frac{۵}{۲}}{\frac{۱}{۲} \times \sqrt{۱۳} \times \sqrt{۱۳}} = \boxed{\frac{۵}{۱۳}} \Rightarrow m = \frac{۵}{۲} \Rightarrow \frac{۱}{۲} \times AM \times AN \times \sin\theta$

Elipon