مهر زارعی

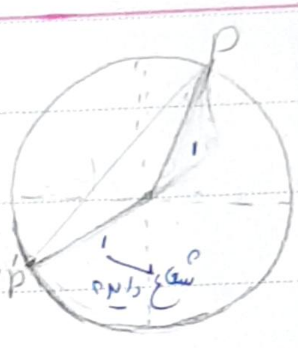
NOTE: DATE: / / SUBJECT:

۱-

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

$$\frac{\sqrt{3}(a+b)}{(b-a)} = \frac{1}{\sqrt{3}} \quad 3a+3b=b-a \quad 2b=-4a \quad \frac{-4}{2}=\frac{b}{a}=-2$$

۲-



$P \Big| \frac{1}{2},\ y \quad P=90 \quad P=300 \times$ ربع (در ربع اول)

$P=90 \xrightarrow{210 \text{ درجه}} 90-210=-150 \longrightarrow 210$ (دوران)

$$P \Big| \frac{1}{2}, \frac{\sqrt{3}}{2} \quad P' \Big| -\frac{\sqrt{3}}{2}, -\frac{1}{2} \quad \sqrt{\left(\frac{\sqrt{3}}{2}+\frac{1}{2}\right)^2 + \left(\frac{1}{2}+\frac{\sqrt{3}}{2}\right)^2} = \sqrt{2\left(\frac{1+\sqrt{3}}{2}\right)^2} \quad 210\ P'$$

$$1+\sqrt{3}\sqrt{\frac{1}{2}} \rightarrow PP' \quad OP=\sqrt{\left(\frac{1}{2}\right)^2+\left(\frac{\sqrt{3}}{2}\right)^2} = \frac{1}{4}+\frac{3}{4}=1$$

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

۳-

$$\frac{40\,min}{x\,min} = \frac{\frac{\pi}{12}}{\frac{\pi}{9}} \quad x=30\,min$$ ساعت ۲:۳۰ خواهد بود

۴-

$$\alpha = \left|\frac{11M}{2} - 30H\right| = 20^\circ \quad \frac{11M}{2}-90=20 \quad M=20$$

$$90-\frac{11M}{2}=20 \quad 70 \times \frac{2}{11} \quad M=12{,}72$$ بعد از گذشت ۲۰ دقیقه

۵-

$$-\frac{1}{2} < \sin x < 1 \quad -\frac{1}{2} < \frac{m-3}{5} < 1 \quad -\frac{5}{2} < m-3 < 5$$

$$\frac{1}{2} < m < 8$$

۶-

$$\frac{\sin\left(\frac{\pi}{2}+15\right)+K\cos\left(\frac{3\pi}{2}-15\right)}{\cos(\pi-15)+2\sin(\pi+15)} = \frac{\frac{\cos 15 - K\sin 15}{\sin 15}}{\frac{-\cos 15 - 2\sin 15}{\sin 15}} = \frac{\tan 15 - K}{-\tan 15 - 2} = 3$$

$\tan 15 = 0{,}25$

$$-0{,}75-6=0{,}25-K \quad K=7$$

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$\frac{1-\cos x}{1+\cos x} = ۲$ $۲ + ۲\cos x = ۱ - \cos x$ $۳\cos x = -۱$ $\cos = -\frac{۱}{۳}$ $\sin x \geq 0$

$\frac{+\cot x + \cot x}{+\tan x - ۲\tan x} = \frac{۲\cot x}{-\tan x} = -۲ \times \frac{\cos x}{\sin x} \times \frac{\cos x}{\sin x} = -۲\frac{(\cos x)^۲}{(\sin x)^۲} = -۲\frac{\frac{۱}{۹}}{\frac{۸}{۹}} = -\frac{۱}{۴}$

$\cos^۲ x = ۱ - \sin^۲ x$ $\sin^۲ x = \frac{۸}{۹}$

$۱ - \frac{۱}{۹}$

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— ۸

$\frac{۱۰۸}{۱۸۰} = \frac{x}{\pi}$ $\frac{۱۰۸\pi}{۱۸۰} = \frac{۳\pi}{۵}$ $\frac{S_A}{S_B} = \frac{\pi r_A^۲}{\pi r_B^۲} = \left(\frac{r_A}{r_B}\right)^۲$

$\frac{۳\pi}{۵} \times r_A = \frac{۹\pi}{۱۰} \times r_B$ $\frac{r_A}{r_B} = \frac{۳}{۲}$ $\left(\frac{r_A}{r_B}\right)^۲ = \frac{۹}{۴}$

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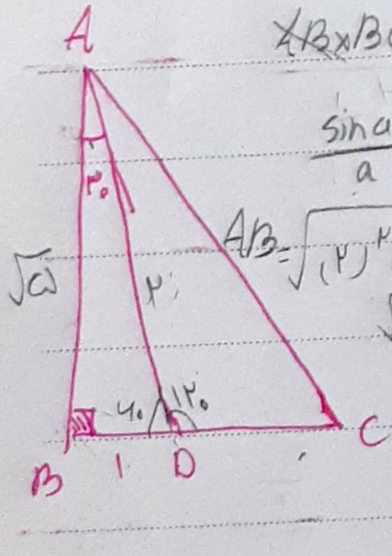
— ۹



$AB \times BC = ۲\sqrt{۳}$

$\frac{\sin a}{a} = \frac{\sin B}{b}$ $\frac{\frac{۱}{۲}}{۱} = \frac{۱}{b}$ $b = ۲$

$AB = \sqrt{(۲)^۲ + (۱)^۲} = \sqrt{۵}$

$\sqrt{۵} \times BC = ۲\sqrt{۳}$ $BC = \frac{۲\sqrt{۳}}{\sqrt{۵}}$

$AC = \sqrt{(\sqrt{۵})^۲ + \left(\frac{۲\sqrt{۳}}{\sqrt{۵}}\right)^۲} = ۵ + \frac{۱۲}{۵} = \sqrt{\frac{۳۷}{۵}}$