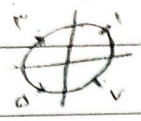
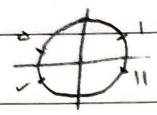
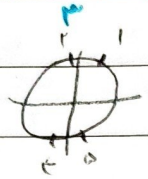
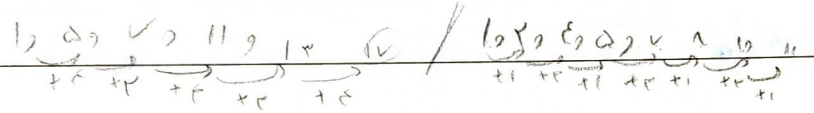
$\tan\frac{11R}{4} + \sin\frac{10R}{4} \times \cos\frac{12R}{4} = -\cot + \cos x - \sin = -\cot + \cos x - \sin$ ①



$\tan\frac{17R}{4} \times \sin\frac{11R}{4} + \cos\frac{10R}{4} = -\cot x - \cos + -\sin = -\cot x - \cos - \sin$







② $\cot = 4 \quad \frac{\cos}{\sin} \rightarrow \tan = \frac{1}{4}$

$$\frac{4\cos - \sin}{\cos + \sin} \xrightarrow{\div\cos} \frac{\frac{4\cos}{\cos} - \frac{\sin}{\cos}}{\frac{\cos}{\cos} + \frac{\sin}{\cos}} = \frac{4 - \tan}{1 + \tan} = \frac{4 - \frac{1}{4}}{1 + \frac{1}{4}} = \frac{\frac{16-1}{4}}{\frac{5}{4}} = \frac{\frac{15}{4}}{\frac{5}{4}} = 3$$

③ $\sin\alpha = 4\cos\alpha$ / α = ربع اول / $\cos = ? \frac{1}{4}$

$\sin = 1 - \cos = 4\cos \Rightarrow 1 = 4\cos \Rightarrow \frac{1}{4} = \cos$

④ $\sin = \frac{\sqrt{7}}{10}$ / $\cos\left(\frac{11R}{4} + \alpha\right) = ?$ / α = ربع اول

$= +\sin \rightarrow +\frac{\sqrt{7}}{10}$

$\tan = \frac{1}{7}$ / $\sin\left(\frac{12R}{4} + \alpha\right)$ / α = ربع اول

$-\cos$

$$1 + \tan^2 = \frac{1}{\cos^2} \rightarrow 1 + \left(\frac{1}{7}\right)^2 = \frac{1}{\cos^2} \Rightarrow \frac{1}{1} + \frac{1}{49} = \frac{49}{49} + \frac{1}{49} = \frac{50}{49} = \frac{1}{\cos^2} \Rightarrow$$

$$\cos^2 = \frac{49}{50} \rightarrow \cos = \frac{+7}{\sqrt{50}}$$

⑤

$۲\sin^۲ + \cos^۲ = \frac{۴}{۳}$ / $\tan^۲ = ?$

$۲\sin^۲ + ۱ - \sin^۲ = \frac{۴}{۳}$

$۱ + \sin = \frac{۴}{۳}$

$\sin = \frac{۴}{۳} - ۱$

$\sin = \frac{۱}{۳}$

$\sin^۲ + \cos^۲ = ۱$

$(\frac{۱}{۳})^۲ + \cos^۲ = ۱$

$\frac{۱}{۹} + \cos^۲ = ۱$

$\cos^۲ = ۱ - \frac{۱}{۹}$

$\cos^۲ = \frac{۸}{۹} \Rightarrow \cos = \frac{\sqrt{۸}}{۳}$

$(\frac{\sin}{\cos})^۲ = \frac{\frac{۱}{۳}}{\frac{\sqrt{۸}}{۳}} = (\frac{۱}{\sqrt{۸}})^۲ = \frac{۱}{۸}$

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⑥

۶ و $\sqrt{۳}$ و α / $S = ۴٫۵$

$\frac{۱}{۲} \times \sqrt{۳} \times ۶ \times \sin\alpha = ۳\sqrt{۳}\sin\alpha = ۴٫۵$

$\sin\alpha = ۴٫۵ \times \frac{۱}{۳\sqrt{۳}} = \frac{\sqrt{۳}}{۲}$ → ۱۲۰ و ۶۰°

$\frac{۱۲۰}{۶۰} = ۲$

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⑦

$S = ۵۴$ / $\frac{۲}{۳}$

اضلاع $b = ۳k$ و $a = ۲k$ → $ab\sin ۱۵۰ = ۲k \times ۳k \times \frac{۱}{۲} = ۳k^۲ = ۵۴$

$k^۲ = ۱۸ \Rightarrow k = ۳\sqrt{۲}$; $P = ۲(a+b) = ۲(۶\sqrt{۲} + ۹\sqrt{۲}) = ۲ \times ۱۵\sqrt{۲} = ۳۰\sqrt{۲}$

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⑧

$AD = ۵ + ۲ = ۷$ ⇒ $AE = ۴$ / $AC = ۷$ / $AD = ۷$ / $AB = ۵$

$AC = ۴ + ۳ = ۷$

$S_{ABC} = \frac{۱}{۲} AB \times AC \times \sin A = \frac{۱}{۲} \times ۵ \times ۷ \times \sin A = ۱۷٫۵ \sin A$

$S_{ADE} = \frac{۱}{۲} AD \times AE \times \sin A = \frac{۱}{۲} \times ۷ \times ۴ \times \sin A = ۱۴ \sin A$

$(۱۷٫۵ - ۱۴)\sin A = ۳٫۵ \sin A = ۱٫۷۵$

$\sin A = \frac{۱٫۷۵}{۳٫۵} = \frac{۱}{۲}$; $\tan A = \tan ۳۰° = \frac{۱}{\sqrt{۳}}$

۹:

$BM = 1 - \frac{1}{6} = \frac{5}{6}$

$\frac{BM}{AM} = \frac{5/6}{1/6} = 5$

$AM = t = \frac{1}{6}$

$NC = t$

$BN = \frac{2}{5}t$

$BC = BN + NC = \frac{7}{5}t$

$\frac{BN}{BC} = \frac{2/5}{7/5} = \frac{2}{7}$

۱۵:

$\frac{1}{\sqrt{\cos^2}} - \tan = \frac{1+\sin}{|\cos|} \Rightarrow \frac{1}{\cos^2} - \frac{\sin}{\cos} = \frac{1}{\cos} + \frac{\sin}{|\cos|}$

$\frac{|\sin|}{\cos} = \frac{-1}{\cot\alpha} \Rightarrow \frac{|\sin|}{\cos} = \frac{-\sin}{\cos} = |\sin| = -\sin\alpha$

$-\cos = |\cos|$

$\cos < 0$

$\pi < \alpha < \frac{3\pi}{2}$

گزینه ۳ = A