الهام میرزایی

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① الف) $27 \times \frac{\pi}{180} = \frac{3\pi}{20}$

ج) $\frac{5\pi \times 180}{12} = 75^\circ$

ب) $125 \times \frac{\pi}{180} = \frac{25\pi}{36}$ (۲) ✓

د) $\frac{4\pi}{9} \times \frac{180}{\pi} = 80^\circ$

② $\frac{\frac{125a}{9}}{400/10} = \frac{x}{360} \rightarrow x = 12.5a$

(۲) ✓

$10a$ و $12.5a$ ، $22.5a \rightarrow 10a + 12.5a + 22.5a = 180$

$\frac{9\pi}{8} \times \frac{180}{\pi} = 22.5a \Rightarrow a = 4$

③ الف) $\frac{1}{2} \times \frac{\sqrt{3}}{2} - \frac{\sqrt{3}}{2} \times \frac{1}{2} - 1 + 2 = 1$

(۲) ✓

ب) $\frac{3 + 1 + \frac{1}{3}}{\sqrt{3} - \frac{\sqrt{3}}{3}} = \frac{\frac{13}{3}}{\frac{2\sqrt{3}}{3}} = \frac{13}{2\sqrt{3}} = \frac{13\sqrt{3}}{6}$

④ $-\frac{1}{2} \times \frac{1}{2} + \frac{\sqrt{3}}{2} \times \frac{\sqrt{3}}{2} = \frac{2}{4} = \frac{1}{2} = \sin^2\theta$

$\sin^2\theta + \cos^2\theta = 1 \Rightarrow \cos^2\theta = \frac{1}{2}$

$\tan^2\theta = 1 \rightarrow \tan\theta = 1$ (۲) ✓

⑥ $\dfrac{2\times\frac{\sqrt{3}}{2}\left(\frac{1}{2}\right)}{\left(\frac{1}{2}\right)^2} = \sqrt{3} = \tan\theta \rightarrow \tan 60^\circ$

$\hookrightarrow 60^\circ = \frac{\pi}{3}$ ✓ ②

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⑦ $\tan^2\theta + 1 = \frac{1}{\cos^2\theta} \rightarrow \cos^2\theta = \frac{1}{4} \rightarrow \cos\theta = \frac{\pm 1}{2}$

$\cos\theta = \frac{1}{\sqrt{4}}$ $\sin\theta = \frac{3}{\sqrt{4}} \rightarrow \frac{\frac{15}{\sqrt{4}} - \frac{1}{\sqrt{4}}}{\frac{3}{\sqrt{4}} - \frac{2}{\sqrt{4}}} = 14$

$\cos\theta = -\frac{1}{\sqrt{4}}$ $\sin\theta = -\frac{3}{\sqrt{4}}$

$\hookrightarrow \frac{-15}{\sqrt{4}} + \frac{1}{\sqrt{4}} = 12$

$\frac{-3}{\sqrt{4}} + \frac{2}{\sqrt{4}}$

② ✓

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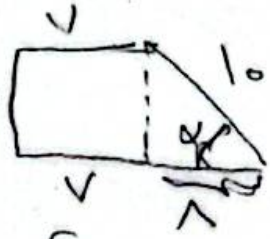
⑧ 

$\sin\alpha = \frac{6}{10} = \frac{\text{مقابل}}{\text{وتر}} = \frac{6}{10}$

$x^2 + 36 = 100 \rightarrow x = 8 \rightarrow$ [illegible]

$\rightarrow 15 + 7 + 10 + 6 = 38$ ② ✓

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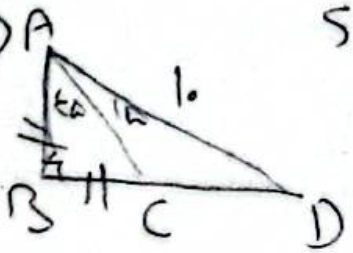
⑨ 

$\sin 60^\circ = \frac{\sqrt{3}}{2} = \frac{BD}{10} \rightarrow BD = 5\sqrt{3}$

$\triangle ABD$: $AB^2 + (5\sqrt{3})^2 = 100$

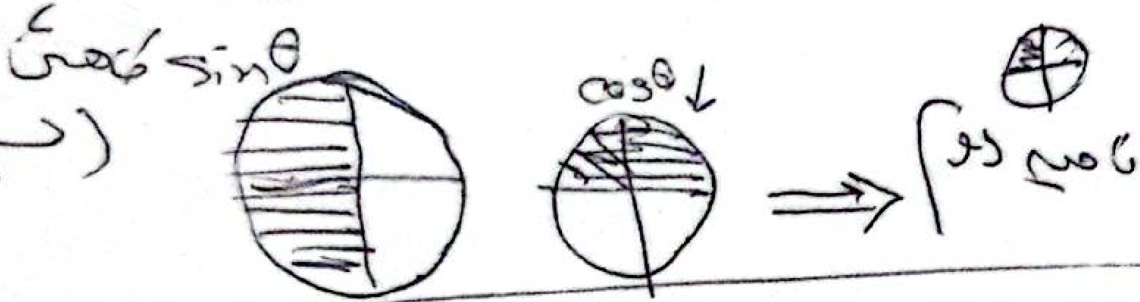
$\Rightarrow AB = 5$, $AB = BC \Rightarrow BC = 5$

$BD - BC = CD \Rightarrow CD = 5\sqrt{3} - 5$

② ✓

۹) الف)

ب)



۲ ✓

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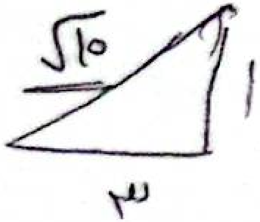
۱۵)



$\rightarrow \sin\theta = \pm\frac{1}{\sqrt{10}} \rightarrow -\frac{1}{\sqrt{10}} = \frac{-\sqrt{10}}{10}$

ناحیه سوم

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