۱۴۰۴/۰۸/۲۹ — تکلیف شماره ۱۴ — [illegible]

۲۵

۱) الف) $27^\circ = (x)\,Rad \quad \frac{27}{180} = \frac{x}{\pi} \quad x = \frac{3}{20}\pi$

ب) $125^\circ = (x)\,Rad \quad \frac{125}{180} = \frac{x}{\pi} \quad x = \frac{25}{36}\pi$

ج) $\frac{5\pi}{12}\,rad = (x)^\circ \quad \frac{x}{180} = \frac{\frac{5\pi}{12}}{\pi} \quad x = 75^\circ$

د) $\frac{4\pi}{9}\,rad = (x)^\circ \quad \frac{x}{180} = \frac{\frac{4\pi}{9}}{\pi} \quad x = 80^\circ$

۲) $\frac{\frac{a\pi}{8}}{\pi} = \frac{x}{180} \quad x = \frac{45}{2}a^\circ \qquad \frac{\frac{125a}{9}}{200} = \frac{x}{180} \quad x = \frac{25}{2}a^\circ$

$\frac{45}{2}a^\circ + \frac{25}{2}a^\circ + 10a^\circ = 180^\circ \quad \frac{90}{2}a = 180 \quad a = 4^\circ$

۳) الف) $\left(\frac{1}{2} \times \frac{\sqrt{3}}{2}\right) - \left(\frac{\sqrt{3}}{2} \times \frac{1}{2}\right) - 1 + (\sqrt{2} \times \sqrt{2}) = 1$

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

۴) $\sin 30^\circ \cos 90^\circ + \cos 30^\circ \sin 90^\circ = \sin^2\theta \qquad \sin\theta = \frac{\sqrt{2}}{2} \quad \theta = 45^\circ$

$\left(-\frac{1}{2} \times \frac{1}{2}\right) + \left(\frac{\sqrt{3}}{2} \times \frac{\sqrt{3}}{2}\right) = \sin^2\theta \qquad \tan\theta = \tan 45^\circ = 1$

$-\frac{1}{4} + \frac{3}{4} = \frac{2}{4} = \sin^2\theta \quad \sin\theta = \pm\frac{1}{\sqrt{2}}$ زاویه حاده است $\Rightarrow \frac{1}{\sqrt{2}}$ ✓ $\quad -\frac{1}{\sqrt{2}}$ ✗

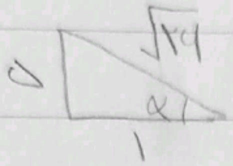
$$\frac{2\tan 30^\circ\,(1-\tan^2 30^\circ)}{(1-\cot^2 60^\circ)^2} = \tan\theta$$ ۱۵

$\frac{90}{180} = \frac{Rad}{\pi}$ $\quad \theta = \frac{\pi}{3}\ Rad$

$$\frac{2\times\frac{\sqrt{3}}{3}\left(1-\frac{1}{3}\right)}{\left(1-\frac{1}{3}\right)^2} = \frac{\frac{4\sqrt{3}}{9}}{\frac{4}{9}} = \sqrt{3} = \tan\theta$$ ← زاویه ۶۰ درجه $\Rightarrow \theta = 60^\circ$

$\frac{\sin\theta}{\cos\theta} = \frac{\text{مقابل}}{\text{مجاور}}$ ۱۶

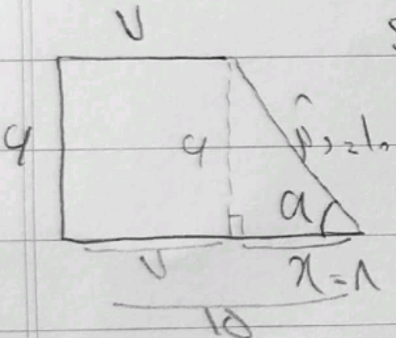
$\tan\theta = 5$



$5^2+1^2=x^2$

$x^2=26 \quad x=\sqrt{26}$

$$\frac{3\sin\theta-\cos\theta}{\sin\theta-4\cos\theta} = \frac{3\times\frac{5}{\sqrt{26}}-\frac{1}{\sqrt{26}}}{\frac{5}{\sqrt{26}}-4\times\frac{1}{\sqrt{26}}} = \frac{\frac{14}{\sqrt{26}}}{\frac{1}{\sqrt{26}}} = 14$$

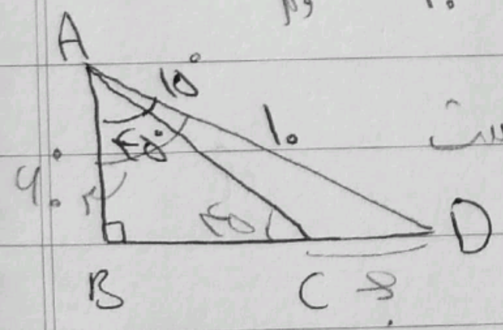


$\sin a = 0.6$

$P_{\square} = 6+7+10+15 = 38$ ۱۷

$10^2-6^2=x^2$

$\sin a = \frac{6}{\text{وتر}} = \frac{6}{10}$ وتر = 10 $\quad x^2=64 \quad x=8$



ضلع روبه‌رو به زاویه ۶۰، $\frac{\sqrt{3}}{2}$ وتر است ۱۸

⇓

$\overline{BD} = 5\sqrt{3}$

$\overline{DC} = \overline{BD} - \overline{BC} = 5\sqrt{3}-5$

$\overline{AB}^2 = 10^2-(5\sqrt{3})^2$

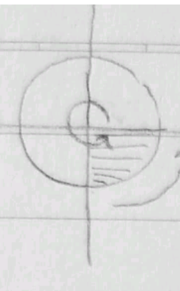
$\overline{AB}^2 = 25 \Rightarrow \overline{AB}=5\ ,\ \overline{BC}=5$

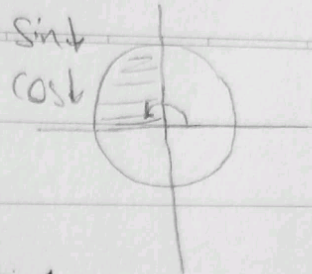
۹)

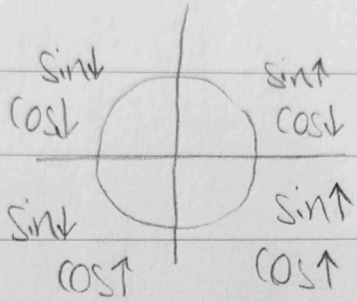
الف) ناحیه چهارم

ب) ناحیه دوم

الف)



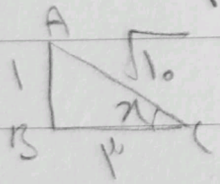




$\frac{\sin x}{\cos x} = \frac{\text{مقابل}}{\text{مجاور}}$

$\tan x = \frac{1}{3}$ x در ناحیه سوم $\sin x = \frac{\text{مقابل}}{\text{وتر}} = \frac{-1}{\sqrt{10}} = \frac{-\sqrt{10}}{10}$

$\sin x < 0$



$AC^2 = 1^2 + 3^2$

$AC = \sqrt{10}$