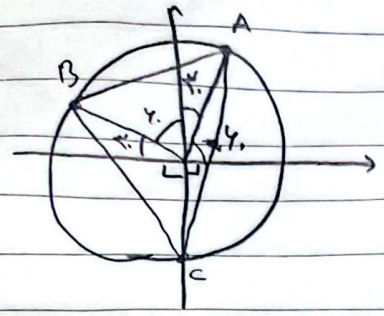
۱



۷۰+۹۰+۱۵۰

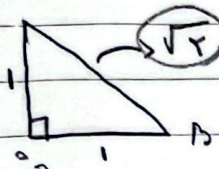
۳- $S_{AOC} = \frac{1}{2}ab\sin\alpha = \frac{1}{2}\times 1\times\frac{1}{2} = \frac{1}{4}$

$S_{ABO} = \frac{1}{2}ab\sin\alpha = \frac{1}{2}\times 1\times 1 = \frac{1}{2} = \frac{2}{4}$

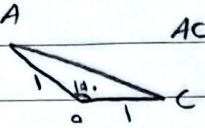
$S_{BOC} = \frac{1}{2}ab\sin\alpha = \frac{1}{2}\times\frac{\sqrt{2}}{2}\times\frac{\sqrt{2}}{2} = \frac{2}{4}$

$\Rightarrow S_{\Delta'} = \frac{3+\sqrt{3}}{4}$ ✓ جواب الف

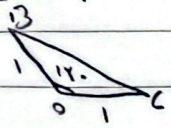
ب)



$\Rightarrow AB = \sqrt{2}$



$AC = \sqrt{1^2+1^2-2\times1\times1\times\cos 120^\circ} = \sqrt{2+\sqrt{3}}$



$BC = \sqrt{2-2\cos 120^\circ} = \sqrt{3}$ ($-2\times-\frac{1}{2}$)

$\Rightarrow P_{ABC} = \sqrt{2}+\sqrt{2+\sqrt{3}}+\sqrt{3}$ ✓ (۲)

ج-

$AC = \log_{\sqrt{3}}^{16} = \log_{3^{\frac{1}{2}}}^{2^4} = 4\log_3^2 \xrightarrow{\log_a^b = \frac{1}{\log_b^a}} 4x$

$BC = \log_2^{\sqrt{3}} = \log_2^{3^{\frac{1}{2}}} = \frac{1}{2}\log_2^3 \xrightarrow{\log_2^3 = x} \frac{1}{2x}$

$\Rightarrow S_{\text{مثلث}} = \frac{1}{2}ab\sin\alpha = \frac{1}{2}\times 4x\times\frac{1}{2x}\times\sin 30^\circ = \frac{1}{2}$ ← جواب ✓ (۲)

ب-

$\cos\alpha = x \longrightarrow 2\cos^4 - \cos^2 - 2\sin^4 + \sin^2 \rightarrow 2(\cos^4-\sin^4) - (\cos^2-\sin^2) = 2\cos 2\alpha - \cos 2\alpha$

$= \cos 2\alpha = 1 \Rightarrow \sin 2\alpha = 0$ ✓ (۲)

($\sin^2+\cos^2=1$)

۹-

$\frac{2\pi}{|b|} = \pi \Rightarrow b = \pm 2$ → قرینه‌دار $\quad a = -3$, $c = -1$

$\Rightarrow y = -2\cos 2\alpha - 1 = 0 \rightarrow -2\cos 2\alpha = 1 \Rightarrow \cos 2\alpha = -\frac{1}{3} \Rightarrow \sin 2\alpha = \frac{2\sqrt{2}}{3}$

(سمت چپ جواب)

$\Rightarrow |\tan\alpha| = \left|\frac{\sin 2\alpha}{\cos 2\alpha}\right| = \left|\frac{\frac{2\sqrt{2}}{3}}{-\frac{1}{3}}\right| = |-2\sqrt{2}| = 2\sqrt{2}$ ✓ (۲)

۰/۱ ۰/۲ ۰/۶

۰/۷ ۰/۸ ۰/۵