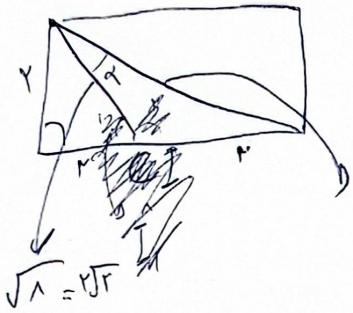
نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ۲۷ کلاس .....

۱

$S = \frac{1}{2} ab\sin C \Rightarrow \frac{9}{2} = \sqrt{3} \times 3\sqrt{3} \times \sin\alpha \rightarrow \sin\alpha = \frac{\sqrt{3}}{2}$

$0 < \alpha < 180 \rightarrow \alpha_1 = 60^\circ,\ \alpha_2 = 120^\circ$ (۲ جواب)

۲



$\cot\alpha = \sqrt{10 - 1} = 3$ (۳)

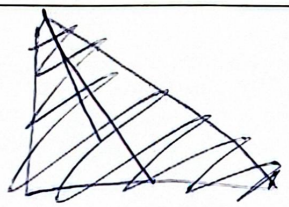
$\sqrt{10}\sin\alpha = 1 \rightarrow \sin\alpha = \frac{\sqrt{10}}{10}$

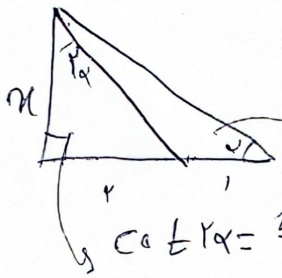
$\sqrt{10} = 2\sqrt{5}$

$\sin\alpha = \frac{\sqrt{10}}{10}$, $\cot\alpha = \sqrt{\frac{10}{10}} = 1$

$\cot\alpha = \sqrt{\frac{10}{10}}$

۳





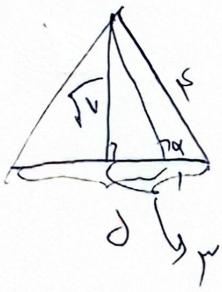
$\cot 2\alpha = \frac{3}{x}$

$\cot 2\alpha = \frac{x}{2}$

$\cot 2\alpha = \frac{1 - \cot^2\alpha}{2\cot\alpha}$

$\frac{x}{2} = \frac{1 - \frac{9}{x^2}}{\frac{6}{x}} \rightarrow 2x^2 = x^2 - 9 \rightarrow x = \frac{3}{2}$

۴



$\tan(\pi - \alpha) = \frac{\sqrt{7}}{2} \Rightarrow \tan\alpha = -\frac{\sqrt{7}}{2}$

۵

$2\tan^2\alpha + 1 = \frac{\frac{4}{3}}{\cos^2\alpha}$

$\frac{4}{3}(1 + \tan^2\alpha)$

$\frac{2}{3}\tan^2\alpha = \frac{1}{3}$

$\tan^2\alpha = \frac{1}{2}$

۶

$\sin^2\alpha = 1-\cos^2\alpha \to \sin^4\alpha = (1-\cos^2\alpha)^2$

$\hookrightarrow \frac{\sin^2\alpha + 4\cos^2\alpha}{1+\cos^2\alpha} - \frac{\cos^2\alpha + 2\sin^2\alpha}{1+\sin^2\alpha} = \cos^2\alpha + 1 - \sin^2\alpha - 1$

$= \cos 2\alpha$

۷

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

$-\cos\alpha\sin\alpha + \cot\alpha$

$\frac{-12}{25} + \frac{3}{4} = 0/48$

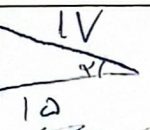
۸

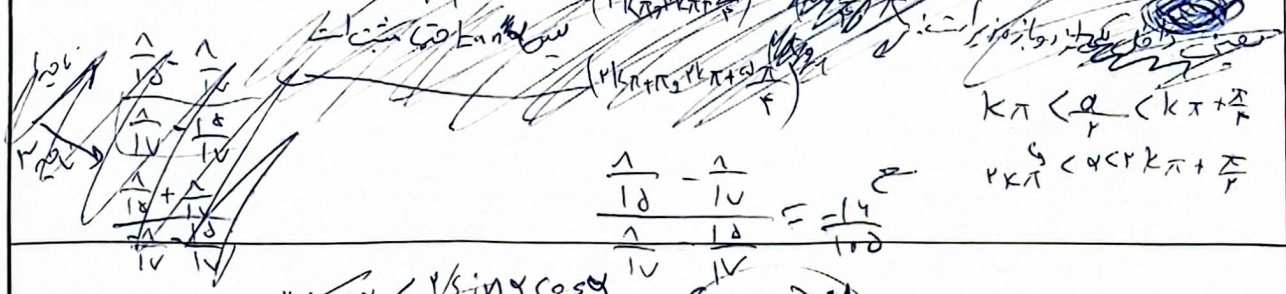
$2\cos\frac{\pi}{3} + \sqrt{2}\left(\sin\frac{\pi}{12} - \cos\frac{\pi}{12}\right)^2 = \frac{3}{2} - 1 = \frac{1}{2}$

$-2\sin\frac{\pi}{4}$

۹

$\tan\alpha = \frac{\frac{1}{2}}{\frac{15}{16}} = +\frac{8}{15}$





$k\pi < \frac{\alpha}{2} < k\pi + \frac{\pi}{4}$

$2k\pi < \alpha < 2k\pi + \frac{\pi}{2}$

$\frac{\frac{8}{15} - \frac{8}{17}}{\frac{8}{17}\cdot\frac{15}{17}} = \frac{16}{120}$

۱۰

$2\sin\alpha < 2\sin\alpha\cos\alpha \to (\cos\alpha > \frac{1}{2})$

$\sin\alpha < 0$ غیرممکن

$\frac{\cos\alpha}{\sin^2\alpha} > 0 \to \cos\alpha > 0$

$0 < \alpha < \frac{\pi}{3}$