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

۱

$$S = \frac{1}{2} \times 4 \times \sqrt{3} \times \sin\alpha = \frac{9}{2} \rightarrow \sin\alpha = \frac{9}{2} \times 12 \times \frac{1}{4\sqrt{3}} \begin{cases} \nearrow \alpha = 120 \\ \searrow \alpha = 60 \end{cases}$$

۲

$$\tan(\alpha + 45) = \frac{\tan\alpha + 1}{1 - \tan\alpha} = 2 \rightarrow \cot\alpha = 3$$

($\tan 45$)

۳

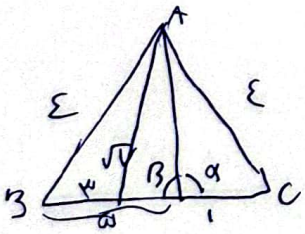
$$\cot\alpha = \frac{3}{y} \qquad \cot 2\alpha = \frac{\cot^2\alpha - 1}{2\cot\alpha} = 0/2 \rightarrow 9 - y^2 = 3y^2$$

$$y = 3/2$$

$$\cot\alpha = 2 \leftarrow$$

۴

$$\tan\alpha = -\tan\beta = -\sqrt{5}/2$$



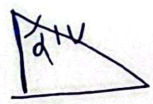
۵

$$3\sin^2\alpha + \cos^2\alpha = 3/4 \xrightarrow{\div \cos^2} 3\sin^2\alpha + 3\cos^2\alpha - \cos^2\alpha = 3/4$$

$$\cos^2\alpha = 3/4$$

$$\sin^2\alpha = 1/4$$

$$\tan^2\alpha = 1/3 \leftarrow$$

$\frac{\sin^4\alpha + 4\cos^2\alpha}{1+\cos^2\alpha} - \frac{\cos^4\alpha + 4\sin^2\alpha - 4}{1+\sin^2\alpha} \Rightarrow 1 - \sin^2\alpha - 1 + \cos^2\alpha = \cos^2\alpha$	۶
$\tan\alpha = 4/3$ $\pi < \alpha < 3\pi/2$ $\sin(9\pi/2+\alpha)\cos(7\pi/2-\alpha) - \tan(\alpha - 3\pi/2)$ $1+\tan^2\alpha = \frac{1}{\cos^2\alpha}$ $1+16/9 \to$ $\sin\alpha = \frac{4}{5}$ $\frac{-12}{25} + \frac{3}{4} = \frac{48+75}{100} = 1{,}23$	۷
$3\cos 4x + \sqrt{2}\sin x - \sqrt{2}\cos x \Rightarrow \sqrt{2}/2 - \sqrt{3}/2 - 1 + 1{,}5 = -0{,}5$ $\sqrt{2}\sin(\pi/3 - \pi/4) = \sin\pi/3 - \cos\pi/3 \to \sqrt{2}\cos\pi/12 = \sqrt{2}\sin\alpha\pi/12$ $\sin\pi/4 + \cos\pi/4$	۸
$\tan(\alpha/2) = \frac{1}{4}$ $\frac{\tan\alpha - \sin\alpha}{\sin\alpha - \cos\alpha}$  $\tan\alpha = \tan(\frac{\alpha}{2}+\frac{\alpha}{2}) = \frac{\frac{1}{4}+\frac{1}{4}}{\frac{-1}{16}+1} = 8/15$ $\frac{\frac{8}{15} - \frac{8}{17}}{8/17 - 15/17} = \frac{16}{-105}$	۹
$2\sin\alpha < 2\sin\alpha\cos\alpha$ → $\sin\alpha < 0 \to \cos\alpha < 1 \to \sin\alpha < 0$ ✓ → $\sin\alpha > 0 \to \cos\alpha > 1$ غلط $\frac{\cos\alpha}{\sin\alpha} > 0 \to \cos\alpha > 0$ ناصری‌جاوید	۱۰