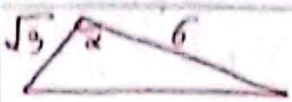
19,75

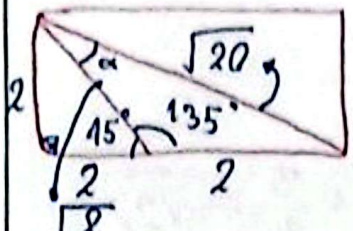
نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره 2.7 کلاس ...پانزدهم ریاضی B



$\frac{6\times\sqrt{3}\times\sin\alpha}{2}=4/5 \rightarrow 6\sqrt{3}\sin\alpha=9$ (۲)

$\rightarrow \sin\alpha=\frac{\sqrt{3}}{2} \xrightarrow{0<\alpha<180^\circ} \alpha=60,120$ (۱)

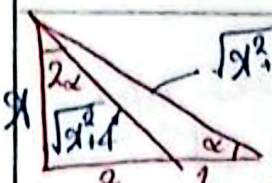
$\frac{120}{60}=2$ ✓



$\frac{\sin 135^\circ\times 2\alpha\times\sqrt{8}}{2}=\frac{\sin\alpha\times\sqrt{20}\times\sqrt{8}}{2}$ (۲)

$\frac{\sqrt{2}}{2}\times 2=\sin\alpha\times 2\sqrt{5} \rightarrow \sin\alpha=\frac{\sqrt{2}}{\sqrt{20}}$ (۲)

$\rightarrow 1+\cot^2\alpha=\frac{1}{\sin^2\alpha} \rightarrow 1+\cot^2\alpha=\frac{20}{2} \rightarrow \boxed{\cot\alpha=3}$ ✓

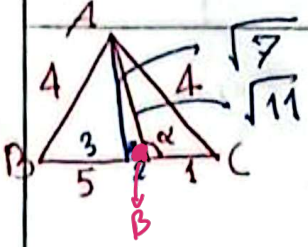


$\sin 2\alpha=\frac{x\times\sqrt{x^2+4}}{x}=\frac{2x}{x}$ (۲)

$\sin\alpha=\frac{x}{\sqrt{x^2+9}}$, $\cos\alpha=\frac{3}{\sqrt{x^2+9}}$ (۲)

$\sin 2\alpha=\sin\alpha\cdot\cos\alpha+\cos\alpha\cdot\sin\alpha=\frac{6x}{x^2+9}=\frac{2}{\sqrt{x^2+4}}$

$\xrightarrow{2\text{ طرفین}} 32x^4+72x^2-3240 \rightarrow x=\boxed{1/5}, \cancel{-1/5} \rightarrow \cot\alpha=\frac{3}{1/5}=15$ (۲) ✓



$\frac{\sqrt{7}}{\sqrt{11}}$

$\sin C=\frac{\sqrt{7}}{4} \rightarrow \frac{\sin C\times 4}{x}=\frac{\sin\alpha\times\sqrt{11}\times 1}{2}$ (۱/۷۵)

$\frac{\sqrt{7}}{\sqrt{11}}=\sin\alpha,\ \cos\alpha=\frac{2}{\sqrt{11}}$ (۴)

$\rightarrow \boxed{\tan\alpha=\frac{-\sqrt{7}}{2}}$ $=\tan(\pi-\beta)=-\tan\beta$

$2\sin^2x+\cos^2x=\frac{4}{3} \rightarrow \sin^2x+1=\frac{4}{3} \rightarrow \sin^2x=\frac{1}{3}$

$\cos^2x=\frac{2}{3}$ $\Big\}+1$ (۲)

$\rightarrow \tan^2x=\frac{\sin^2x}{\cos^2x}=\frac{\frac{1}{3}}{\frac{2}{3}}=\frac{1}{2}$ ✓ (۵)

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

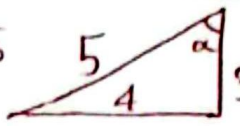
$\sin^4\alpha = 1 + \cos^4\alpha - 2\cos^2\alpha$

$\cos^4\alpha = 1 + \sin^4\alpha - 2\sin^2\alpha$

$\frac{1+\cos^4\alpha+2\cos^2\alpha}{1+\cos^2\alpha} - \frac{1+\sin^4\alpha+2\sin^2\alpha}{1+\sin^2\alpha} = 1+\cos^2\alpha-(1+\sin^2\alpha)$ (۲)

$\longrightarrow \cos^2\alpha - \sin^2\alpha = \cos 2\alpha$

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



$\longrightarrow \sin\alpha = -\frac{1}{5}$, $\cos\alpha = -\frac{3}{5}$ } ۳ مورد

$\cot\alpha = \frac{3}{4}$ (۲)

$\sin(\frac{\pi}{2}+\alpha)\cdot\cos(\frac{7\pi}{2}-\alpha) - \tan(\alpha - \frac{3\pi}{2})$ ۷

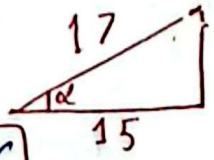
$\cos\alpha \cdot -\sin\alpha + \cot\alpha = -\frac{3}{5}\cdot\frac{4}{5} + \frac{3}{4} = 0.27$

$\alpha = \frac{\pi}{12} = 15^\circ \rightarrow (3\cos 60^\circ + \sqrt{2}\sin 15^\circ - \sqrt{2}\cos 15^\circ)$ (۲)

$\frac{3}{2} + \sqrt{2}\sin(45^\circ - 30^\circ) - \sqrt{2}\cos(45^\circ - 30^\circ) = \frac{3}{2} + \sqrt{2}(\sin 45^\circ\cdot\cos 30^\circ - \sin 30^\circ \cdot \cos 45^\circ) - \sqrt{2}(\cos 45^\circ\cdot\cos 30^\circ + \sin 45^\circ\cdot\sin 30^\circ) = \frac{3}{2} + \sqrt{2}(\frac{\sqrt{2}}{2}\cdot\frac{\sqrt{3}}{2} - \frac{1}{2}\cdot\frac{\sqrt{2}}{2}) - \sqrt{2}(\frac{\sqrt{2}}{2}\cdot\frac{\sqrt{3}}{2} + \frac{\sqrt{2}}{2}\cdot\frac{1}{2}) = -1 + \frac{3}{2} = \frac{1}{2}$

$\tan(\frac{\alpha}{2}) = \frac{1}{4} \rightarrow \tan(\alpha - \frac{\alpha}{2}) = \frac{\tan\alpha - \tan\frac{\alpha}{2}}{1+\tan\alpha\cdot\tan\frac{\alpha}{2}} = \frac{\tan\alpha - \frac{1}{4}}{1+\frac{\tan\alpha}{4}}$ (۲)

$\longrightarrow \tan\alpha = \frac{8}{15}$



$\sin\alpha = \frac{8}{17}$, $\cos\alpha = \frac{15}{17}$ ۹

$\frac{\frac{8}{15} - \frac{8}{17}}{-\frac{7}{17}} = \frac{-16}{105}$ $\longrightarrow \frac{\tan\alpha - \sin\alpha}{\sin\alpha - \cos\alpha}$

$2\sin\alpha < \sin 2\alpha, \ 0 < \frac{\cot\alpha}{\sin\alpha} \longrightarrow 0 < \frac{\cos\alpha}{\sin^2\alpha} \longrightarrow \cos\alpha > 0$ (۲)

$\sin\alpha < \sin\alpha\cdot\cos\alpha \longrightarrow \sin\alpha < 0$ ۱۰

$\longrightarrow$ ۴ مورد