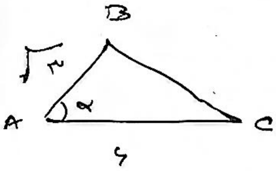
نام و نام خانوادگی ...آرشام پاری... پاسخنامه تشریحی تکلیف شماره ...۲۷... کلاس ...یازدهم...

۲۰

۱ ②

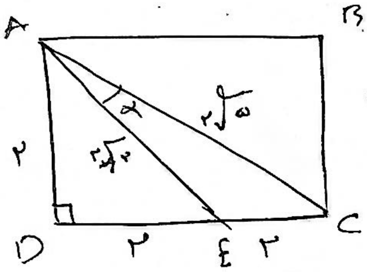


$\to S = \frac{۱}{۲} AB \sin\alpha \to ۴{,}۵ = \frac{۱}{۲} \times \sqrt{۳} \times ۶ \times \sin\alpha$

$\to \sin\alpha = \frac{\sqrt{۳}}{۲} \to \alpha = \frac{\pi}{۳}$ یا $\frac{۲\pi}{۳}$

$\to \frac{\frac{۲\pi}{۳}}{\frac{\pi}{۳}} = \boxed{۲}$ ✓

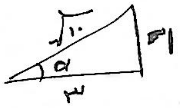
۲ ②



$AE = \sqrt{۴+۴} = ۲\sqrt{۲} \quad , \quad AC = \sqrt{۴+۱۶} = ۲\sqrt{۵}$

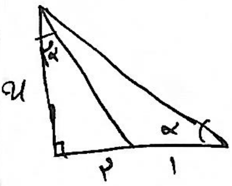
قانون کسینوس ها: $۴ = (۲\sqrt۲)^۲ + (۲\sqrt۵)^۲ - ۲(۲\sqrt۲)(۲\sqrt۵)\cos\alpha$

$\to ۴ = ۲۸ - ۸\sqrt{۱۰}\cos\alpha \to \cos\alpha = \frac{۲۴}{۸\sqrt{۱۰}} = \frac{۳}{\sqrt{۱۰}}$



$\Rightarrow \cot\alpha = \boxed{۳}$ ✓

۳ ②



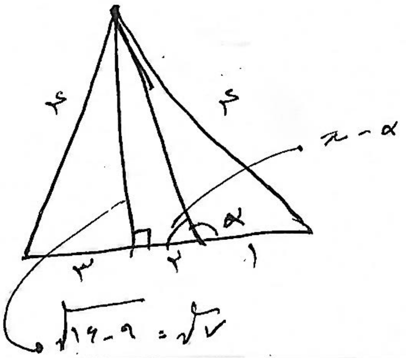
$\to tg\,\alpha = \frac{x}{۳} \quad , \quad tg\,۲\alpha = \frac{۲}{x}$

$\to tg\,۲\alpha = \frac{۲tg\,\alpha}{۱-tg^۲\alpha} = \frac{\frac{۲x}{۳}}{۱-\frac{x^۲}{۹}} = \frac{\frac{۲x}{۳}}{\frac{۹-x^۲}{۹}} = \frac{۶x}{۹-x^۲}$

$\to \frac{۶x}{۹-x^۲} = \frac{۲}{x} \Rightarrow ۶x^۲ = ۱۸ - ۲x^۲ \to ۸x^۲ = ۱۸ \to x = \frac{۳}{۲} \quad (tg > ۰)$

$\to tg\,\alpha = \frac{۱}{۲} \quad , \quad \cot\alpha = \boxed{۲}$ ✓

۴ ②



$\Rightarrow tg(\pi-\alpha) = -tg\,\alpha = \frac{\sqrt{۷}}{۲}$

$\Rightarrow tg\,\alpha = \boxed{\frac{-\sqrt{۷}}{۲}}$ ✓

۵ ②

$۲\sin^۲ + \cos^۲ = \sin^۲ + \underbrace{\sin^۲ + \cos^۲}_{۱} = \frac{۴}{۳} \to \sin^۲ = \frac{۱}{۳}$

$\cot^۲ = \frac{۱}{\sin^۲} - ۱ = ۳ - ۱ = ۲ \Rightarrow tg^۲ = \boxed{\frac{۱}{۲}}$ ✓

$(\sin^2-\cos^2)\underbrace{(\sin^2+\cos^2)}=(\sin^2-\cos^2)$ با هم خط می‌خورند

۶ ۲

مخرج مشترک : $\dfrac{\sin^4-\cos^4+\sin^6-\cos^6+4\cos^2-4\sin^2+4\cos^2\sin^2-4\cos^2\sin^2}{\underbrace{1+\sin^4+\cos^4}_{2}+\cos^2\sin^2}$

$\xrightarrow{} (\sin^2+\cos^2)^2-\sin^2\cos^2=1-\sin^2\cos^2$

$=\dfrac{(\sin^2-\cos^2)+4(\cos^2-\sin^2)+(\sin^2-\cos^2)(\sin^4+\cos^4+\sin^2\cos^2)}{2+\sin^2\cos^2}=\dfrac{-(\sin^2-\cos^2)(2+\sin^2\cos^2)}{2+\sin^2\cos^2}$

$=\cos^2-\sin^2=\boxed{\cos 2\alpha}$ ✓

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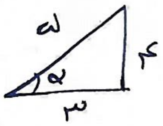
۷ ۲



$\sin\alpha=\dfrac{-4}{5}\quad tg\alpha=\dfrac{4}{3},$

$\cos\alpha=\dfrac{-3}{5}\quad \cot\alpha=\dfrac{3}{4}$

$\longrightarrow \sin\left(\dfrac{9\pi}{2}+\alpha\right)\cos\left(\dfrac{7\pi}{2}-\alpha\right)-tg\left(\alpha-\dfrac{3\pi}{2}\right)=(+\cos\alpha)(-\sin\alpha)+\cot\alpha$

$=-\cos\alpha\sin\alpha+\cot\alpha=-\left(-\dfrac{3}{5}\right)\left(\dfrac{-4}{5}\right)+\dfrac{3}{4}=\dfrac{-12}{25}+\dfrac{3}{4}=\boxed{0{,}27}$ ✓

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۸ ۲

$3\cos 4\alpha=3\cos\dfrac{4\pi}{12}=3\cos\dfrac{\pi}{3}=\dfrac{3}{2}$

$\sqrt{2}\sin\alpha-\sqrt{2}\cos\alpha=\sqrt{2}(\sin\alpha-\cos\alpha)=\sqrt{2}\left(\sqrt{2}\sin\left(\alpha-\dfrac{\pi}{4}\right)\right)$

$=2\sin\left(-\dfrac{\pi}{6}\right)=-2\sin\dfrac{\pi}{6}=-1$

$\rightarrow(3\cos 4\alpha+\sqrt{2}\sin\alpha-\sqrt{2}\cos\alpha)=\dfrac{3}{2}-1=\boxed{\dfrac{1}{2}}$ ✓

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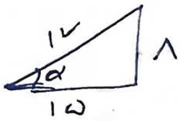
۹ ۲

$tg^2\left(\dfrac{\alpha}{2}\right)=\dfrac{1-\cos\alpha}{1+\cos\alpha}=\dfrac{1}{16}\rightarrow 16-16\cos\alpha=1+\cos\alpha\rightarrow 15=17\cos\alpha$

$\Longrightarrow \cos\alpha=\dfrac{15}{17}\longrightarrow \cos\alpha>0,\ tg\dfrac{\alpha}{2}>0\Longrightarrow$ ربع اول α



$\dfrac{tg\alpha-\sin\alpha}{\sin\alpha-\cos\alpha}=\dfrac{\frac{8}{15}-\frac{8}{17}}{\frac{8}{17}-\frac{15}{17}}=\dfrac{\frac{16}{255}}{\frac{-7}{17}}=\dfrac{17\times16}{-7\times255}=\dfrac{\cancel{17}\times16}{-7\times15}=\boxed{\dfrac{-16}{105}}$ ✓

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۱۰ ۲

$2\sin\alpha<\sin2\alpha\longrightarrow 2\sin\alpha<2\sin\alpha\cos\alpha\longrightarrow \sin\alpha<\sin\alpha\cos\alpha$

$\longrightarrow 0<\sin\alpha\cos\alpha-\sin\alpha\longrightarrow 0<\sin\alpha\underbrace{(\cos\alpha-1)}_{\ominus}\longrightarrow \boxed{\sin\alpha<0}$

$0<\dfrac{\cot}{\sin\alpha}\xrightarrow{\sin\alpha<0}\boxed{\cot<0}\Longrightarrow$ $\boxed{\text{ربع چهارم است } \alpha}$ ✓