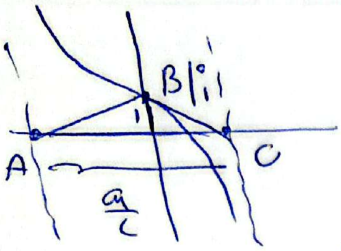
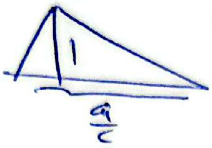
نام و نام خانوادگی ...آرین پنجه‌فولادگران... پاسخنامه تشریحی تکلیف شماره ...۱۵... کلاس ...دوازدهم پسر A...



$\tan(-۲x+\frac{\pi}{۴}) \longrightarrow T=\frac{\pi}{|-۲|}=\frac{\pi}{۲}$

$\xrightarrow{x=۰} \tan\frac{\pi}{۴}=۱ \longrightarrow B|^{۰}_{۱}$

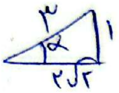


$S_{\text{مثلث}}=\frac{۱}{۲}\times ۱\times\frac{\pi}{۲}=\boxed{\frac{\pi}{۴}}$ جواب

$x^۲-(\sin\alpha)x=\frac{۱}{۴}\cos^۲\alpha \xrightarrow{x=\frac{۲}{۳}} \frac{۴}{۹}-\frac{۲}{۳}\sin\alpha=\frac{۱}{۴}\cos^۲\alpha$

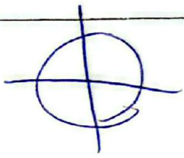
$\xrightarrow{\times ۳۶} ۱۶-۲۴\sin\alpha=۹(۱-\sin^۲\alpha)=۹-۹\sin^۲\alpha \Longrightarrow ۹\sin^۲\alpha-۲۴\sin\alpha+۷=۰$

$\sin^۲\alpha-۲۴\sin\alpha+۶۳=۰ \quad (\sin\alpha-۲۱)(\sin\alpha-۳)=۰ \to \sin\alpha=\frac{۳}{۹}=\frac{۱}{۳}$ ✓ , $\sin\alpha=\frac{۲۱}{۹}=\frac{۷}{۳}$ ✗

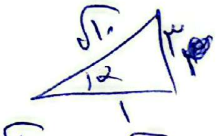


$\longrightarrow \tan\alpha=\frac{۱}{۲\sqrt{۲}} \longrightarrow ۱+\tan^۲\alpha=۱+\frac{۱}{۸}=\boxed{\frac{۹}{۸}}$ جواب

$\log\sin\alpha-\log-\cos\alpha=\log_{۱۰}^{۳}=$ $\quad \cos\alpha<۰$, $\sin\alpha>۰$



$\Longrightarrow \log_{۱۰}^{-\frac{\sin\alpha}{\cos\alpha}}=\log_{۱۰}^{۳} \longrightarrow \boxed{\tan\alpha=-۳}$



$\longrightarrow \sin\alpha=\frac{۳}{\sqrt{۱۰}}$

$\longrightarrow \cos\alpha=\frac{-۱}{\sqrt{۱۰}}$

$\sin\alpha-\cos\alpha=\frac{۳}{\sqrt{۱۰}}+\frac{۱}{\sqrt{۱۰}}=\frac{۴}{\sqrt{۱۰}}=\frac{۴\sqrt{۱۰}}{۱۰}=\boxed{\frac{۲\sqrt{۱۰}}{۵}}$

$\sin^۴\alpha+\underset{۱-\sin^۲\alpha}{\cancel{\cos^۲\alpha}}=\frac{۴}{۵} \longrightarrow \sin^۴\alpha-\sin^۲\alpha+\frac{۱}{۵}=۰ \xrightarrow{\sin^۲\alpha=t} ۵t^۲-۵t+۱=۰$

$t_۱=\frac{۵+\sqrt{۵}}{۱۰} \xrightarrow{\sin^۲\alpha+\cos^۲\alpha=۱} \cos^۲\alpha=\frac{۵-\sqrt{۵}}{۱۰} \longrightarrow \cos^۴\alpha+\sin^۲\alpha=\left(\frac{۵-\sqrt{۵}}{۱۰}\right)^۲+\frac{۵+\sqrt{۵}}{۱۰}=\frac{۸}{۱۰}=۰/۸$

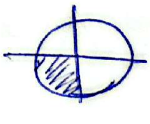
$t_۲=\frac{۵-\sqrt{۵}}{۱۰} \xrightarrow{\sin^۲\alpha+\cos^۲\alpha=۱} \cos^۲\alpha=\frac{۵+\sqrt{۵}}{۱۰} \longrightarrow \cos^۴\alpha+\sin^۲\alpha=\left(\frac{۵+\sqrt{۵}}{۱۰}\right)^۲+\frac{۵-\sqrt{۵}}{۱۰}=\frac{۸}{۱۰}=۰/۸$

$\boxed{۰/۸}$ ← جواب آخر.

$\frac{۳\sin\alpha+\sin\alpha\cos\alpha}{۲(۱-\cos^۲\alpha)}<۰ \longrightarrow \frac{\cancel{\sin\alpha}(۳+\cos\alpha)}{۲\sin^۲\alpha} \longrightarrow ① \boxed{\frac{۳+\cos\alpha}{۲\sin\alpha}<۰}$

$\sin\alpha\tan\alpha-\frac{۱}{\cos\alpha}>۰ \longrightarrow \frac{\overset{\ominus}{\sin^۲\alpha-۱}}{\cos\alpha}>۰ \xrightarrow{-۱\leq\sin^۲\alpha-۱\leq۰} \boxed{\cos\alpha=\ominus}$

$\xrightarrow{-۱\leq\cos\alpha\leq۰} \frac{\overset{\oplus}{۳+\cos\alpha}}{۲\sin\alpha}<۰ \longrightarrow \boxed{\sin\alpha<۰}$



ناحیه سوم:

⑥

$$\frac{۲}{\sin\alpha}+\frac{۳}{\cos\alpha}=۰ \longrightarrow \frac{۲}{\sin\alpha}=\frac{-۳}{\cos\alpha} \longrightarrow \cot\alpha=-\frac{۳}{۲}$$

$$\longrightarrow \frac{\overset{\tan\alpha}{\sin\alpha}}{\cos\alpha}=-\frac{۲}{۳}$$

$$\tan\alpha+\cot\alpha=-\left(+\frac{۲}{۳}+\frac{۳}{۲}\right)=-\left(\frac{۴+۹}{۶}\right)=\boxed{\frac{-۱۳}{۶}}$$

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⑦

$$\frac{\sqrt{۱+\cancel{\text{[illegible]}}\,۲\sin۲۵°\cos۲۵°}}{\sin۵۰°+\sin۱۰°}=\frac{\sqrt{\sin^2۲۵°+\cos^2۲۵°+۲\sin۲۵°\cos۲۵°}}{\cos۴۰°+\sin۱۰°}=\frac{\sin۲۵°+\cos۲۵°}{\cos(۶۰-۲۰)+\sin(۳۰-۲۰)}$$

$$\frac{\sin۲۵°+\cos۲۵°}{\frac{۱}{۲}\cos۲۰+\cancel{\frac{\sqrt{۳}}{۲}\sin۲۰°}+\frac{۱}{۲}\cos۲۰°\cancel{-\frac{\sqrt{۳}}{۲}\sin۲۰}}=\frac{\sin۲۵+\cos۲۵°}{\cos۲۰°}=\frac{\sqrt{۲}\,\overset{\sin۷۰°}{\cancel{\sin(۲۵+۴۵°)}}}{\cos۲۰°}=\boxed{\sqrt{۲}}$$

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⑧

$$(۱-۲\sin^2۵°)(۲\cos^2۱۰-۱)\left(\frac{۱-\tan^2۲۰°}{۱+\tan^2۲۰°}\right)=(\cos۱۰°)(\cos۲۰°)(\cos۴۰°)$$

$$\frac{\overset{\frac{۱}{۲}\sin۲۰°}{\cancel{\sin۱۰\cos۱۰°}}\cos۲۰°\cos۴۰}{\sin۱۰°}=\frac{۱}{۲}\,\frac{\overset{\frac{۱}{۲}\sin۴۰°}{\cancel{\sin۲۰\cos۲۰}}}{\sin۱۰°}=\frac{۱}{۴}\,\frac{\overset{\frac{۱}{۲}\sin۸۰°}{\cancel{\sin۴۰°\cos۴۰}}}{\sin۱۰°}=\frac{۱}{۸}\,\frac{\cos۱۰°}{\sin۱۰°}$$

$$=\boxed{\frac{۱}{۸}\cot۱۰°}$$ جواب

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⑨

$$\sin\alpha+۳\cos\alpha=۲\longrightarrow\sin\alpha=۲-۳\cos\alpha\xrightarrow{\text{به توان دو}}\underset{۱-\cos^2\alpha}{\sin^2\alpha}=۴+۹\cos^2\alpha-۱۲\cos\alpha$$

$$۱۰\cos^2\alpha-۱۲\cos\alpha=-۳$$ ①

$$۵\overset{(۲\cos^2\alpha-۱)}{\cancel{\cos۲\alpha}}-۱۲\cos\alpha\longrightarrow\underbrace{۱۰\cos^2\alpha-۱۲\cos\alpha}_{-۳}-۵=?\longrightarrow-۳-۵=\boxed{-۸}$$ جواب

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⑩

$$\sin B\sin\hat{C}=\frac{۱}{۲}\big(\cos(B-C)-\cos(B+C)\big)=\cos^2\frac{A}{۲}$$

$$\cos^2\frac{A}{۲}=\frac{۱+\cos A}{۲}\Rightarrow\frac{۱}{\cancel{۲}}\Big(\cos(B-C)-\cos(\overset{۱۸۰-A}{\cancel{B+C}})\Big)=\frac{۱+\cos A}{\cancel{۲}}$$

$$\cos(B-C)\cancel{+\cos A}=۱+\cancel{\cos A}\longrightarrow\cos(B-C)=۱\longrightarrow B-C=۰°$$

$$B=C\Rightarrow B=C=۷۲\longrightarrow A+\overset{۱۴۴}{\cancel{B+C}}=۱۸۰\longrightarrow\boxed{\hat{A}=۳۶°}$$