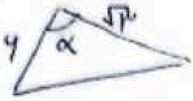
۱۹٫۷۵

نام و نام خانوادگی محسن جلال [illegible] ...... پاسخنامه تشریحی تکلیف شماره ۲۷ کلاس یازدهم [illegible] B



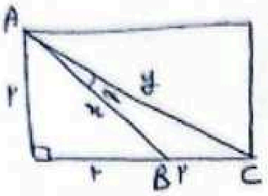
$S=\frac{۱}{۲}\times ۶\times\sqrt{۳}\times\sin\alpha=۴٫۵$

$\sin\alpha=\frac{۴٫۵}{۳\sqrt{۳}}=\frac{\frac{\cancel{۹}^{۳}}{۲}}{\cancel{۳}\sqrt{۳}}=\frac{۳}{۲\sqrt{۳}}$

$=\frac{\sqrt{۳}}{۲}\longrightarrow\alpha=۶۰^\circ$ ۱

$\longrightarrow\alpha=۱۲۰^\circ$ ۴

$\frac{۱۲۰}{۶۰}=\boxed{۲}$



$x=\sqrt{۲^۲+۲^۲}=۲\sqrt{۲}$

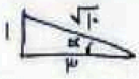
$y=\sqrt{۲^۲+۴^۲}=۲\sqrt{۵}$

$\overset{\triangle}{ABC}:\ BC=\sqrt{x^۲+y^۲-۲xy\cos\alpha}$ ۲

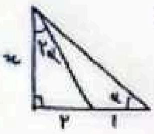
۴

$۴=۸+۲۰-\sqrt{۱۰}\cos\alpha$

$\cos\alpha=\frac{۳}{\sqrt{۱۰}}$



$\boxed{\cot\alpha=۳}$



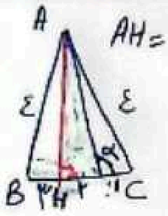
$\cot\alpha=?$

$\cot\alpha=\frac{۳}{x}\longrightarrow\frac{۱}{\tan\alpha}=\frac{x}{۳}$ $\tan۲\alpha=\frac{۲\tan\alpha}{۱-\tan^۲\alpha}$ ۴ ۳

$\tan۲\alpha=\frac{۲}{x}$

$\frac{۲}{x}=\frac{\frac{۲x}{۳}}{۱-\frac{x^۲}{۹}}$

$۲-\frac{۲x^۲}{۹}=\frac{۲x^۲}{۳}$ $\frac{۸x^۲}{۹}=۲$ $x^۲=\frac{۹}{۴}$ $\boxed{x=\frac{۳}{۲}}$ $\cot\alpha=\frac{۳}{x}=\frac{۳}{\frac{۳}{۲}}=\boxed{۲}$



$AH=\sqrt{۱۶-۹}=\sqrt{۷}$

$\tan(\pi-\alpha)=\frac{\sqrt{۷}}{۳}$ ۴ ۴

$-\tan\alpha=\frac{\sqrt{۷}}{۳}\Longrightarrow\tan\alpha=-\frac{\sqrt{۷}}{۳}$

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

$\cos^۲x=\frac{۲}{۳}$

$۱+\tan^۲x=\frac{۱}{\cos^۲x}$ ۵

$\tan^۲x=\frac{۳}{۲}-۱=\boxed{\frac{۱}{۲}}$

CS Scanned with CamScanner

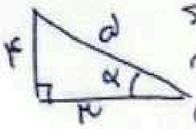
$$\frac{\sin^{۴}\alpha+۴\cos^{۲}\alpha}{۱+\cos^{۲}\alpha}-\frac{\cos^{۴}\alpha+۴\sin^{۲}\alpha}{۱+\sin^{۲}\alpha}=$$

$$\sin^{۴}\alpha=(\sin^{۲}\alpha)^{۲}=(۱-\cos^{۲}\alpha)^{۲}=۱+\cos^{۴}\alpha-۲\cos^{۲}\alpha$$: [illegible] (۲) ۶

$$\frac{۱+\cos^{۴}\alpha\overset{۲\cos^{۲}\alpha}{\cancel{-۲\cos^{۲}\alpha+۴\cos^{۲}\alpha}}}{۱+\cos^{۲}\alpha}-\frac{۱+\sin^{۴}\alpha\overset{۲\sin^{۲}\alpha}{\cancel{-۲\sin^{۲}\alpha+۴\sin^{۲}\alpha}}}{۱+\sin^{۲}\alpha}=\frac{(\cos^{۲}\alpha+۱)^{۲}}{۱+\cos^{۲}\alpha}-\frac{(\sin^{۲}\alpha+۱)^{۲}}{۱+\sin^{۲}\alpha}=$$

$$\cos^{۲}\alpha\cancel{+۱}-\sin^{۲}\alpha\cancel{-۱}=\cos^{۲}\alpha-\sin^{۲}\alpha=\boxed{\cos ۲\alpha}$$

$$\sin(\underset{\frac{\pi}{۲}}{\cancel{\frac{۹\pi}{۲}}}+\alpha)\cos(\underset{\frac{۳\pi}{۲}}{\cancel{\frac{۷\pi}{۲}}}-\alpha)-\tan(\alpha-\frac{۳\pi}{۲})=$$



$\sin\alpha=-\frac{۴}{۵}$

$\cos\alpha=-\frac{۳}{۵}$

$\cot\alpha=\frac{۳}{۴}$

۷

$$\cos\alpha\times(-\sin\alpha)+\cot\alpha=$$

$$\frac{-۳}{۵}\times\frac{۴}{۵}=\frac{-۱۲}{۲۵}\qquad\frac{-۱۲}{۵_{\times۴}}+\frac{۳}{۴}=\cancel{\frac{-۴۸+۱۵}{۲۰}=\frac{-۳۳}{۲۰}}\qquad\frac{۲۷}{۱۰۰}$$

(۱,۷۵)

$$\sin^{۲}\frac{\pi}{۱۲}=\frac{۱-\cos\frac{\pi}{۶}}{۲}=\frac{۱-\frac{\sqrt{۳}}{۲}}{۲}\longrightarrow\sin\frac{\pi}{۱۲}=\frac{\sqrt{۲-\sqrt{۳}}}{۲}$$

(۲)

$$\cos^{۲}\frac{\pi}{۱۲}=\frac{۱+\cos\frac{\pi}{۶}}{۲}=\frac{۱+\frac{\sqrt{۳}}{۲}}{۲}\longrightarrow\cos\frac{\pi}{۱۲}=\frac{\sqrt{۲+\sqrt{۳}}}{۲}$$ ۸

$$۳\cos\frac{\pi}{۳}+\sqrt{۲}\left(\frac{\sqrt{۲-\sqrt{۳}}}{۲}\right)-\sqrt{۲}\left(\frac{\sqrt{۲+\sqrt{۳}}}{۲}\right)=\frac{۳}{۲}+\frac{\sqrt{\overset{(۱-\sqrt{۳})^{۲}}{۴-۲\sqrt{۳}}}}{۲}-\frac{\sqrt{\overset{(۱+\sqrt{۳})^{۲}}{۴+۲\sqrt{۳}}}}{۲}=\frac{۳+\sqrt{۳}-۱-\sqrt{۳}-۱}{۲}$$

$$\boxed{\frac{۱}{۲}}$$

$$\tan^{۲}\left(\frac{\alpha}{۲}\right)=\frac{۱-\cos\alpha}{۱+\cos\alpha}\longrightarrow\frac{۱}{۱۶}=\frac{۱-\cos\alpha}{۱+\cos\alpha}$$

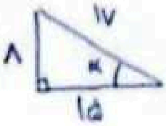
$۱۶-۱۶\cos\alpha=۱+\cos\alpha$ (۲)

$۱۷\cos\alpha=۱۵$

$\cos\alpha=\frac{۱۵}{۱۷}$

$\sin\alpha=\frac{۸}{۱۷}$

$\tan\alpha=\frac{۸}{۱۵}$



۹

$$\frac{\tan\alpha-\sin\alpha}{\sin\alpha-\cos\alpha}=\frac{\frac{۸}{۱۵}-\frac{۸}{۱۷}}{\frac{۸}{۱۷}-\frac{۱۵}{۱۷}}=\frac{\frac{۱۶}{\cancel{۲۵۵}^{۱۵}}}{\frac{-۷}{\cancel{۱۷}}}=\boxed{\frac{-۱۶}{۱۰۵}}$$

$۲\sin\alpha<\sin ۲\alpha$

$\cancel{۲\sin\alpha}<\cancel{۲\sin\alpha}\cos\alpha$

/ $\cos\alpha>۱$ غیرممکن

\ $\cos\alpha<۱$ ✓ ← پس $۲\sin\alpha<۰$ و نامساوی برقرار گردد (۲)

(I) $\sin\alpha<۰$ $\quad\frac{\cos\alpha}{\sin\alpha}>۰\longrightarrow$ (II) $\cot\alpha<۰$ ۱۰

(I), II $\Rightarrow$ ناحیه چهارم