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نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ۱۰ کلاس .....

۱

الف) $\tan\left(\frac{۳\pi}{۴}\right)+\sin\left(\frac{۷\pi}{۶}\right)\cos\left(\frac{۵\pi}{۶}\right) = -۱ + \frac{۱}{۲} = -\frac{۱}{۲}$

ب) $\underbrace{\tan\left(\frac{۵\pi}{۹}\right)}_{\tan ۱۵^\circ}\underbrace{\sin\left(\frac{۵\pi}{۶}\right)}_{\sin ۳۰^\circ}+\underbrace{\cos\left(\frac{۴\pi}{۳}\right)}_{\cos ۲۴۰^\circ} = \underbrace{-\frac{\sqrt{۳}}{۳}\times\frac{\sqrt{۳}}{۳}}_{+\frac{۳}{۹}}+\left(-\frac{۱}{۲}\right) = \frac{۱}{۳}-\frac{۱}{۲} = ۰$

۲

$$\frac{۳\cos x-\sin x}{\cos x+\sin x}\xrightarrow[\div\sin x]{\div\sin x}\frac{۳\cot x-۱}{\cot x+۱} = \frac{۳(۴)-۱}{۴+۱} = \frac{۱۱}{۵} = ۲\frac{۱}{۵}$$

۳

$$\sin^۲\alpha+\cos^۲\alpha=۱ \rightarrow (۲\cos^{*}\alpha)^۲+\cos^۲\alpha=۱ \rightarrow ۴\cos^۲\alpha+\cos^۲\alpha=۱$$

$$۵\cos^۲\alpha=۱ \rightarrow \cos^۲\alpha=\frac{۱}{۵} \rightarrow \cos\alpha=+\frac{۱}{\sqrt{۵}} \rightarrow \times$$

$$\cos\alpha=-\frac{۱}{\sqrt{۵}}=-\frac{\sqrt{۵}}{۵}$$

۴

الف) $\cos\alpha=\sqrt{۱-\sin^۲\alpha} \Rightarrow \sqrt{۱-\left(\frac{\sqrt{۲}}{۱۰}\right)^۲}=\sqrt{\frac{۹۸}{۱۰۰}}=\frac{۷\sqrt{۲}}{۱۰} \Rightarrow \cos\left(\frac{۱۱\pi}{۴}+\alpha\right)=\cos\frac{۳\pi}{۴}\cos\alpha-\sin\frac{۳\pi}{۴}\sin\alpha$

$$\Rightarrow -\frac{\sqrt{۲}}{۲}\times\frac{-۷\sqrt{۲}}{۱۰}-\left(\frac{\sqrt{۲}}{۲}\times\frac{\sqrt{۲}}{۱۰}\right)=\frac{۱۴}{۲۰}-\frac{۲}{۲۰}=\frac{۱۲}{۲۰}=\frac{۳}{۵}$$

ب) $\sin\left(\frac{۵\pi}{۴}+\alpha\right)=\sin\frac{۵\pi}{۴}\cos\alpha+\sin\alpha\cos\frac{۵\pi}{۴} \rightarrow -\frac{\sqrt{۲}}{۲}\times\frac{۷}{۵\sqrt{۲}}+\frac{۱}{۵\sqrt{۲}}\times-\frac{\sqrt{۲}}{۲}=\frac{-۶}{۵}$

$$۱+\tan^۲\alpha=\frac{۱}{\cos^۲\alpha} \rightarrow \cos=\frac{۷}{۵\sqrt{۲}} \qquad \sin^{*}=\sqrt{۱-\cos^۲}=\frac{۱}{۵\sqrt{۲}}$$

۵

$$\cos^۲x=۱-\sin^۲x$$

$$۲\sin^۲x+۱-\sin^۲x=\sin^۲x+۱=\frac{۶}{۴} \rightarrow \sin^۲x=\frac{۱}{۳} \rightarrow \cos^۲=۱-\frac{۱}{۳}=\frac{۲}{۳}$$

$$\tan x=\frac{\sin x}{\cos x} \rightarrow \tan^۲x=\frac{\sin^۲x}{\cos^۲x}=\frac{\frac{۱}{۳}}{\frac{۲}{۳}}=\frac{۱}{۲}$$

۶

$S_{\text{مثلث}} = \frac{1}{2}\times 6\times\sqrt{3}\times\sin\alpha = 4/5$

$3\sqrt{3}\sin\alpha = 4/5 \to \sin\alpha = \frac{4/5}{3\sqrt{3}} = \frac{4/5\sqrt{3}}{9} = \frac{\sqrt{3}}{2} \to 60^\circ ,\ 120^\circ$

$\frac{120}{60} = 2$ برابر

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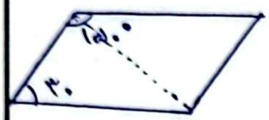

$(\frac{1}{2}\times 3x\times 2x\times \sin 30^\circ)\times 2 = 54 \Rightarrow 6x^2\times\frac{1}{2} = 54 \to 6x^2 = 108 \to x^2 = 18$

$x = \pm\sqrt{18}$

$P = (3\sqrt{18} + 2\sqrt{18})\times 2 = 10\sqrt{18}$

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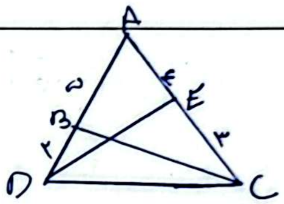

$S_{ABC} = \frac{1}{2}\times 5\times 7\times\sin\hat{A} = \frac{35}{2}\sin\hat{A} = 17/5\sin\hat{A}$

$S_{ADE} = \frac{1}{2}\times 4\times 7\times\sin\hat{A} = 14\sin\hat{A}$

$17/5\sin\hat{A} - 14\sin\hat{A} = 1/75 \to 3/5\sin\hat{A} = 1/75 \to \sin\hat{A} = 0/5 = \frac{1}{2}$ ⟶ چون حاده است $\to A = 30^\circ$

$\to \tan 30^\circ = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$

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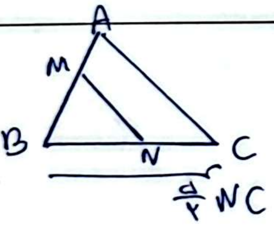

$2BN = 3NC \to BN = \frac{3}{2}NC \to \frac{3}{2}NC + NC = \frac{5}{2}NC$

$S_{ABC} = \frac{1}{2}\times\frac{5}{2}NC\times AB\times\sin\hat{B} = 3\underbrace{(\frac{1}{2}\times\frac{3}{2}NC\times MB\times\sin\hat{B})}_{S_{BMN}}$

$\frac{5}{4}NC\underbrace{AB}_{AM+MB}\times\sin\hat{B} = \frac{9}{4}NC\times MB\times\sin\hat{B}$

$\Rightarrow \frac{5}{4}AM + \frac{5}{4}MB = \frac{9}{4}MB \to \frac{5}{4}AM = MB \Rightarrow \frac{BM}{AM} = \frac{5}{4}$

۱۰

$\frac{|\sin\alpha|}{\cos\alpha} = -\frac{1}{\cot\alpha} \to \frac{|\sin\alpha|}{\cos\alpha} = \frac{-\sin\alpha}{\cos\alpha} \Rightarrow |\sin\alpha| = -\sin\alpha \to \sin\alpha < 0$

$\frac{1}{\sqrt{\cos^2\alpha}} - \tan\alpha = \frac{1+\sin\alpha}{|\cos\alpha|} \to \tan\alpha = \frac{-\sin\alpha}{|\cos\alpha|} = \frac{\sin\alpha}{\cos\alpha} \Rightarrow |\cos\alpha| = -\cos\alpha$

$\cos\alpha < 0$

$\Rightarrow \sin\alpha < 0 ,\ \cos\alpha < 0 \Rightarrow$ در ناحیه سوم قرار دارد