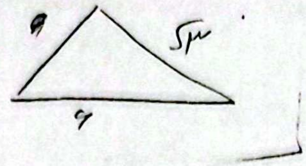
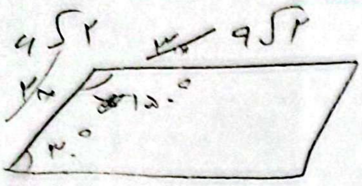
$\frac{۶\times\sqrt{۲۷}\times\frac{\sin}{\alpha}}{۲} = ۴,۵$.۶



۱,۵

$۹\sqrt{۳}\times\sin\alpha = ۹$

$\sin\alpha = \frac{۳}{۲\sqrt{۳}}\cdot\frac{\sqrt{۳}}{\sqrt{۳}} = \frac{۳\sqrt{۳}}{۶} = \frac{\sqrt{۳}}{۲} \quad \alpha = ۶۰^\circ$



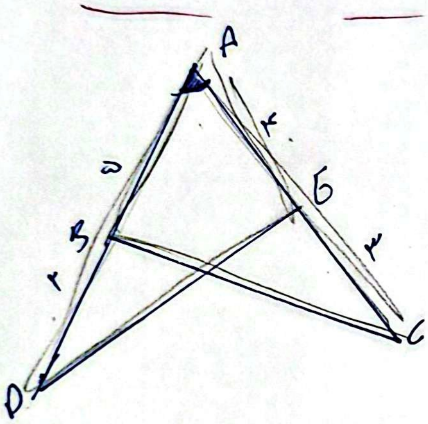
$۲x\times۳x\times\sin ۱۵۰ = ۵۴$.۷

$\sin ۱۵۰ = \frac{۱}{۲}$ $\quad ۲x\times۳x = ۱۰۸$

$۶x^۲ = ۱۰۸ \quad x^۲ = ۱۸ \quad x = ۳\sqrt{۲}$

محیط $= ۲\times(۱۵\sqrt{۲}) = ۳۰\sqrt{۲}$

۲



$S_{ABC} = ۵\times۷\times\frac{۱}{۲}\times\sin\hat{A} = \frac{۳۵}{۲}\sin\hat{A}$.۸

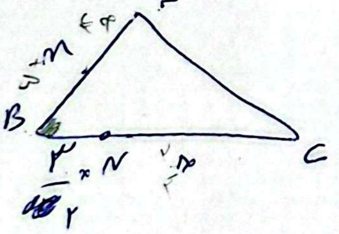
$S_{ADE} = ۷\times۴\times\frac{۱}{۲}\times\sin\hat{A} = ۱۴\sin\hat{A}$

۲

$\frac{۳۵\sin\hat{A}}{۲} - \frac{۲۸\sin\hat{A}}{۲} = \frac{۱۷۵}{۱۰۰} \quad \frac{۷}{۲}\sin\hat{A} = \frac{۱۷۵}{۱۰۰}$

$\boxed{\hat{A} = ۳۰^\circ}$ $\quad \sin\hat{A} = \frac{۱۷۵}{۱۰۰}\div\frac{۷}{۲} = \frac{۱}{۲}$

$\tan\alpha = \frac{\sqrt{۳}}{۳}$



$S_{ABC} = \frac{۱}{۲}\times BA\times BC\times\sin\hat{B} = ۳\left(BM\times\frac{۱}{۲}\times\frac{۳}{۵}BC\times\sin\hat{B}\right)$.۹

$\frac{۱}{۲}\times BA\times BC\times\sin B = ۳BM\times\frac{۹BC}{۵}\times\frac{۳}{۲}\times۳\sin\hat{B}$

$BA\times BC\times\sin B = ۳BM\times\frac{۹BC}{۵}\times۳\times۳\sin\hat{B}$

۲

$\frac{BM\times\frac{۳BC}{۵}\times\frac{۳}{۵}\times\sin B}{BA\times BC\times\sin B} = \frac{۱}{۳}$ $\quad \frac{BM}{BA} = \frac{۵}{۹}$

$\frac{BM}{AB} = \boxed{\frac{۵}{۴}}$

$\frac{۱}{|\cos\alpha|} - \frac{\sin\alpha}{\cos\alpha} = \frac{۱+\sin\alpha}{|\cos\alpha|} \quad \frac{۱-\sin\alpha}{|\cos\alpha|} =$ $\quad \cos\alpha \geq ۰$.۱۰

۲

$\frac{|\sin\alpha|}{\cos\alpha} = \frac{-\sin\alpha}{\cos\alpha} \quad \sin < ۰$

$\cos\alpha$

آرشید اردشیرک

۱۷٫۵

1.

الف)

$\tan\frac{11\pi}{4} = \tan(3\pi - \frac{\pi}{4})$ $\sin\frac{15\pi}{4} = (\sin 4\pi - \frac{\pi}{4})$

$\cos\frac{13\pi}{4} = \cos(3\pi + \frac{\pi}{4})$

$-\tan(\frac{\pi}{4}) - \sin(\frac{\pi}{4}) + \cos(\frac{\pi}{4}) = \frac{\cancel{-\sin(\frac{\pi}{4})}}{\cancel{\cos(\frac{\pi}{4})}} - \frac{\sin\cos(\frac{\pi}{4})}{\cos(\frac{\pi}{4})\frac{\sqrt2}{2}} - \frac{\cos^2(\frac{\pi}{4})}{\cos(\frac{\pi}{4})}$

$-1 - \frac{2}{2\sqrt2}\,\frac{\sqrt2}{2} \cdot \frac{\sqrt2}{2}$

$-\frac{2}{2} - \frac{2\sqrt2}{4} - \frac{\sqrt2}{2} = \frac{-2-2\sqrt2}{2}$

۲

ب)

$\tan\frac{17}{6}\pi = \tan(3\pi - \frac{\pi}{6}) = -\tan(\frac{\pi}{6}) = -\frac{1}{\sqrt3}$

$\sin\frac{11\pi}{3} = \sin(4\pi - \frac{\pi}{3}) = -\sin(\frac{\pi}{3}) = -\frac{\sqrt3}{2}$

$\cos\frac{10\pi}{3} = \cos(3\pi + \frac{\pi}{3}) = -\cos(\frac{\pi}{3}) = -\frac{1}{2}$

$-\frac{1}{\cancel{\sqrt3}} \times (-\frac{\cancel{\sqrt3}}{2}) = \frac{1}{2}$ $\frac{1}{2} - \frac{1}{2} = \boxed{0}$

2.

$\frac{\cos}{\sin} = 4$ $\cos = 4k$ $\sin = k$ $\frac{3(4k)+k}{4k+k} = \frac{11k}{5k} = \frac{11}{5}$

۲

3.

$\sin a < 0$
$\cos a < 0$

$\sin \geq \cos\alpha \Rightarrow 225 < \alpha < 270$

$-\frac{\sqrt2}{2} < \cos\alpha < 0$

۱

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4. الف

ناحیه ۲ ← $\begin{cases}\sin\alpha > 0 \\ \cos\alpha < 0\end{cases}$

$\cos(\frac{11\pi}{4} + \alpha) = \cos(3\pi - \frac{\pi}{4}) + \cos(\alpha)$

$\cancel{-\cos(45°)}$

$-\frac{\sqrt2}{2} + \cos(\alpha) = \boxed{-\frac{\sqrt2}{2} + \frac{7}{5\sqrt2}}$

۱

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

$\frac{1}{50} + \cos^2\alpha = \frac{50}{50}$ $\frac{49}{50} = \cos^2\alpha$ $\cos = \frac{7}{\sqrt{50}} = \frac{7}{5\sqrt2}$

5.

$2\sin^2 + 1 - \sin^2 = \frac{4}{3}$

$\sin^2 + \frac{3}{3} = \frac{4}{3}$ $\sin^2 = \frac{1}{3}$ $\boxed{\sin = \frac{1}{\sqrt3}}$

$\sin^2 + \cos^2 = 1$

$\frac{1}{3} + \cos^2 = \frac{3}{3}$

$\boxed{\cos = \frac{\sqrt2}{\sqrt3}}$

۲

$\tan^2 = \frac{\sin^2}{\cos^2} = \frac{\frac{1}{3}}{\frac{2}{3}} = \frac{1}{2}$

3

$\sin\alpha = ۲\cos\alpha \rightarrow \tan\alpha = \frac{۲\cos\alpha}{\cos\alpha} = ۲$

$1 + \tan^۲\alpha = \frac{1}{\cos^۲\alpha} \rightarrow 1 + ۲^۲ = \frac{1}{\cos^۲\alpha} \rightarrow \cos^۲\alpha = \frac{1}{۵} \rightarrow \cos\alpha = \pm\frac{\sqrt{۵}}{۵}$

α در ناحیه سوم قرار دارد و $\cos\alpha < ۰$ می باشد $\leftarrow$ $\boxed{\cos\alpha = -\frac{\sqrt{۵}}{۵}}$

4_الف

$\cos^۲\alpha = 1 - \sin^۲\alpha \rightarrow \cos\alpha = 1 - \left(\frac{\sqrt{۲}}{۱۰}\right)^۲ = 1 - \frac{۲}{۱۰۰} = \frac{۹۸}{۱۰۰} \xrightarrow[\cos\alpha < ۰]{۲\ \text{ناحیه}\ \alpha} \cos\alpha = -\frac{۷\sqrt{۲}}{۲}$

$\cos\left(\frac{۱۱\pi}{۴} + \alpha\right) = \cos\left(۳\pi - \frac{\pi}{۴} + \alpha\right) = -\cos\left(\alpha - \frac{\pi}{۴}\right)$

$-\left(\frac{\sqrt{۲}}{۲} \times \cos\alpha + \frac{\sqrt{۲}}{۲}\sin\alpha\right) = -\frac{\sqrt{۲}}{۲}\left(-\frac{۷\sqrt{۲}}{۱۰} + \frac{\sqrt{۲}}{۱۰}\right) = -\frac{1}{\cancel{\sqrt{۲}}} \times -\frac{۶\cancel{\sqrt{۲}}}{۱۰} = \boxed{\frac{۳}{۵}}$

$\tan\alpha = \frac{1}{۷} \rightarrow 1 + \tan^۲\alpha = \frac{1}{\cos^۲\alpha} \rightarrow 1 + \frac{1}{۴۹} = \frac{1}{\cos^۲\alpha}$

$\cos^۲\alpha = \frac{۴۹}{۵۰} \xrightarrow[\cos\alpha > ۰]{\text{ناحیه اول}\ \alpha} \cos\alpha = \frac{۷}{۵\sqrt{۲}} \times \frac{\sqrt{۲}}{\sqrt{۲}} = \frac{۷\sqrt{۲}}{۱۰}$ 4_ب

$\sin^۲\alpha = 1 - \frac{۴۹}{۵۰} = \frac{1}{۵۰} \xrightarrow[\sin\alpha > ۰]{\text{ناحیه اول}\ \alpha} \sin\alpha = \frac{1}{۵\sqrt{۲}} \times \frac{\sqrt{۲}}{\sqrt{۲}} = \frac{\sqrt{۲}}{۱۰}$

$\sin\left(۳\pi + \frac{\pi}{۴} + \alpha\right) = -\sin\left(\frac{\pi}{۴} + \alpha\right) = -\left(\frac{\sqrt{۲}}{۲}\cos\alpha + \frac{\sqrt{۲}}{۲}\sin\alpha\right)$

$-\frac{\sqrt{۲}}{۲}\left(\frac{۷\sqrt{۲}}{۱۰} + \frac{\sqrt{۲}}{۱۰}\right) = -\frac{1}{\cancel{\sqrt{۲}}} \times \frac{۸\cancel{\sqrt{۲}}}{۱۰} = \boxed{-\frac{۴}{۵}}$

6

$۶ \times \sqrt{۳} \times \sin\alpha \times \frac{1}{۲} = \frac{۹}{۲} \rightarrow \sin\alpha = \frac{۹}{۶\sqrt{۳}} \times \frac{\sqrt{۳}}{\sqrt{۳}} = \frac{۹\sqrt{۳}}{۱۸} = \frac{\sqrt{۳}}{۲}$

مثلث $\rightarrow ۰ < \alpha < \pi$

$\rightarrow \alpha = \frac{\pi}{۳}$ یا ۶۰°

$\rightarrow \alpha = \frac{۲\pi}{۳}$ یا ۱۲۰°

$\rightarrow \frac{\frac{۲\pi}{۳}}{\frac{\pi}{۳}} = \boxed{۲}$