sin a cos b + cos a sin b

$\frac{1}{2} \times \frac{\sqrt{3}}{2} + \frac{\sqrt{3}}{2} \times \frac{1}{2}$

$\frac{3}{4} - \frac{1}{4} = \frac{2}{4}$

Date :

آروین شفازاده — دهم ریاضی کلاس B

Subject :

۱) الف) $-1 + \left(-\frac{\sqrt{2}}{2} \times -\frac{\sqrt{2}}{2}\right) = \boxed{-\frac{1}{2}}$

ب) $\left(-\frac{\sqrt{3}}{2} \times -\frac{\sqrt{3}}{2}\right) + -\frac{1}{2} = \boxed{0}$

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۲) $1 + \cot^2 x = \frac{1}{\sin^2 x} = 1 + 16 = \frac{1}{\sin^2 x} \Rightarrow \sin^2 x = \frac{1}{17} \Rightarrow \sin x = \boxed{\frac{1}{\sqrt{17}}}$

$\Rightarrow \cos^2 x = \frac{16}{17} \Rightarrow \cos x = \frac{4}{\sqrt{17}} \Rightarrow \dfrac{\frac{12}{\sqrt{17}} - \frac{1}{\sqrt{17}}}{\frac{4}{\sqrt{17}} + \frac{1}{\sqrt{17}}} = \boxed{\frac{11}{5}}$

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۳) $\sin^2 a + \cos^2 a = 1 = 4\cos^2 a + \cos^2 a = 1 \Rightarrow \cos^2 a = \frac{1}{5} \Rightarrow \boxed{\cos a = \frac{-1}{\sqrt{5}}}$

$\Rightarrow \sin a = \frac{-2}{\sqrt{5}}$

ربع سوم

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۴) الف) $\cos\left(\frac{11\pi}{4} + a\right) = \cos a \cos\frac{11\pi}{4} - \sin a \sin\frac{11\pi}{4}$

$\left(\frac{-7\sqrt{2}}{10} \times \frac{-\sqrt{2}}{2}\right) - \left(\frac{\sqrt{2}}{10} \times \frac{\sqrt{2}}{2}\right) = \frac{+14}{20} - \frac{2}{20} = \frac{12}{20} = \frac{6}{10} = \boxed{\frac{+3}{5}}$

$\Rightarrow \cos a = \frac{-7\sqrt{2}}{10}$

$+\frac{3}{5}$

ب) $\cot a = 7 \Rightarrow 1 + 49 = \frac{1}{\sin^2 a} \Rightarrow \sin^2 a = \frac{1}{50} \Rightarrow \sin a = \frac{1}{5\sqrt{2}}$

$\Rightarrow \cos a = \frac{7}{5\sqrt{2}}$

$\sin\left(\frac{5\pi}{4} + a\right) = \left(\sin\frac{5\pi}{4} \times \cos a\right) + \left(\cos\frac{5\pi}{4} \times \sin a\right) = \left(-\frac{\sqrt{2}}{2} \times \frac{7}{5\sqrt{2}}\right) + \left(-\frac{\sqrt{2}}{2} \times \frac{1}{5\sqrt{2}}\right)$

$= \frac{-7}{10} + \frac{-1}{10} = \frac{-8}{10} = \frac{-4}{5}$

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۵) $\sin^2 x + (\sin^2 x + \cos^2 x) = \frac{4}{3} \Rightarrow \sin^2 x = \frac{1}{3} \Rightarrow \sin x = \frac{1}{\sqrt{3}}$

$\Rightarrow \cos^2 x = \frac{2}{3}$

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

PAN

۶)

$S_{ABC} = \frac{1}{2} \times 4 \times \sqrt{3} \times \sin a = 4/5 \Rightarrow \sin a = \frac{4/5}{3 \times \sqrt{3}} = \frac{1/5}{\sqrt{3}} = \frac{3}{2\sqrt{3}} = \frac{3\sqrt{3}}{6} = \frac{\sqrt{3}}{2}$

$\Rightarrow \sin a = \frac{\sqrt{3}}{2} \Rightarrow a \begin{cases} 60 \\ 120 \end{cases} \Rightarrow \frac{120}{60} = \boxed{2}$

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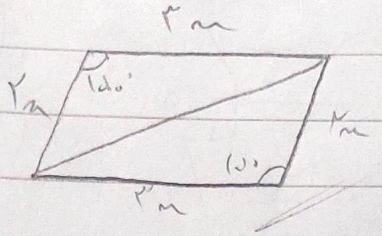
۷)



$S_{\Delta} = 2m \times 3m \times \frac{1}{2} \times \frac{1}{2} = \frac{3m^2}{2} = 54$

$\Rightarrow 3m^2 = 108 \Rightarrow m^2 = 36 \Rightarrow m = 6$

$\Rightarrow P = 10m = 60$

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۸)

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

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

$\Rightarrow \sin A \left(\frac{35}{2} - \frac{28}{2}\right) = \frac{7}{4}$ ، $\frac{7}{2}$

$\Rightarrow \sin A = \frac{1}{2} \Rightarrow \tan A = \frac{1}{\sqrt{3}} = \boxed{\frac{\sqrt{3}}{3}}$

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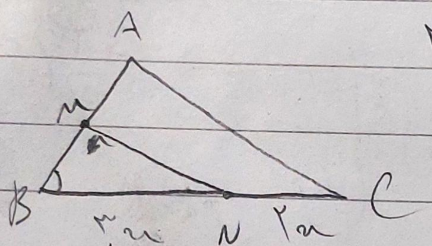
۹)



$2BN = 3NC \Rightarrow \frac{BN}{NC} = \frac{3}{2}$

$\frac{S_{ABC}}{S_{AMN}} = \frac{\frac{1}{2} \times 5 \times AB \times \sin B}{\frac{1}{2} \times 3 \times BM \times \sin B} = \frac{5AB}{3BM} = \frac{3}{1}$

$\Rightarrow 5AB = 9BM$

$\Rightarrow \frac{AB}{BM} = \frac{9}{5} = \frac{AM+BM}{BM} = \frac{9}{5} = \frac{AM}{BM} + 1 = \frac{9}{5} \Rightarrow \frac{AM}{BM} = \frac{4}{5} \Rightarrow \frac{BM}{AM} = \boxed{\frac{5}{4}}$

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۱۰)

$\frac{-1}{\cot a} = -\tan a \Rightarrow \tan a : -$ (ربع دوم یا چهارم)

$\frac{1}{|\cos a|} - \frac{\sin a}{\cos a} = \frac{1+\sin a}{|\cos a|} \Rightarrow \frac{\sin a}{|\cos a|} = -\frac{\sin a}{\cos a} \Rightarrow \cos a : -$

ناحیه دوم