هادی نژادکرد - دهم پسر A - تکلیف شماره ۱۸

الف) $\tan\frac{3\pi}{4} + \sin\frac{7\pi}{4}\cos\frac{5\pi}{4} = -1 + \left(-\frac{\sqrt{2}}{2} \times \frac{-\sqrt{2}}{2}\right) = -1 + \frac{1}{2} = \boxed{-\frac{1}{2}}$ ۱-

ب) $\tan\frac{5\pi}{6}\sin\frac{5\pi}{3} + \cos\frac{4\pi}{3} = \left(-\frac{\sqrt{3}}{3}\right)\times\left(\frac{-\sqrt{3}}{2}\right) + \left(-\frac{\sqrt{3}}{2}\right) = \frac{1}{2} - \frac{\sqrt{3}}{2} = \boxed{\frac{1-\sqrt{3}}{2}}$

۲-

$$\frac{3\cos\alpha - \sin\alpha}{\cos\alpha + \sin\alpha} \xrightarrow{\div 3\sin\alpha} \frac{\cot\alpha - \frac{1}{3}}{\frac{1}{3}\cot\alpha + \frac{1}{3}} = \frac{4 - \frac{1}{3}}{\frac{4}{3} + \frac{1}{3}} = \frac{\frac{11}{3}}{\frac{5}{3}} = \boxed{\frac{11}{5}}$$

$\sin^2\alpha + \cos^2\alpha = 1 \Rightarrow 4\cos^2\alpha + \cos^2\alpha = 1 \Rightarrow 5\cos^2\alpha = 1$ ۳-

$\Rightarrow \cos^2\alpha = \frac{1}{5} \Rightarrow \cos\alpha$ → $\frac{1}{5}$ → غ ق ق ؛ → $\boxed{-\frac{1}{5}}$

$\frac{2}{100} + \cos^2\alpha = 1 \Rightarrow \cos^2\alpha = \frac{98}{100} \Rightarrow \cos\alpha =$ { $\frac{\sqrt{98}}{10}$ → غ ق ق ؛ $\frac{-\sqrt{98}}{10}$ } ۴-

$\Rightarrow \cos\left(\frac{3\pi}{4} + \alpha\right) = \cos\frac{3\pi}{4}\cdot\cos\alpha - \sin\frac{3\pi}{4}\cdot\sin\alpha$

$= \frac{-\sqrt{2}}{2} \times \frac{-\sqrt{98}}{10} - \frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{10} = \frac{14}{20} - \frac{2}{20} = \frac{12}{20} = \boxed{0{,}6}$

$1 + \sin^2\alpha = \frac{4}{3} \Rightarrow \sin^2\alpha = \frac{1}{3} \Rightarrow \cos^2\alpha = \frac{2}{3}$ ۵-

$\tan^2\alpha = \frac{1}{\cos^2\alpha} - 1 = \frac{1}{\frac{2}{3}} - 1 = \frac{3}{2} - 1 = \boxed{\frac{1}{2}}$

$4{,}5 = \frac{1}{2} \times 6 \times \sqrt{3} \times \sin\alpha \Rightarrow \sin\alpha = \frac{4{,}5}{3\sqrt{3}} = \frac{\sqrt{3}}{2}$ { $\alpha = 60$ ؛ $\alpha = 120$ } ۶-

$\Rightarrow \frac{120}{60} = 2$

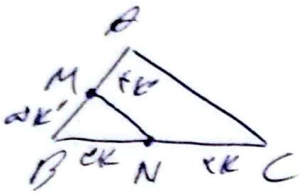
$\frac{1}{2} \times 3K \times 2K \times \sin 150 = 54 \Rightarrow 3K^2 \times \frac{1}{2} = 54 \Rightarrow K^2 = 36$ { $K = -6$ → غ ق ق ؛ $K = 6$ } ۷-

$\Rightarrow 3K = 18,\ 2K = 12$

$M = 2(3K + 2K) = 2(18 + 12) = \boxed{60}$

$۲\sin\theta - ۲۸\sin\theta = ۲,۵ \Rightarrow ۷\sin\theta = ۶,۵ \Rightarrow \sin\theta = ۰,۵$ — ۸

$\Rightarrow \theta = ۳۰^\circ \Rightarrow \tan\theta = \frac{۱}{۲} \div \frac{\sqrt{۳}}{۲} = \boxed{\frac{\sqrt{۳}}{۳}}$



$\Rightarrow AB \perp AK = ۲FK \perp MB \perp C$ — ۹

$\Rightarrow \triangle ABB = ۹MB$

$\Rightarrow \frac{BM}{AM} = \frac{AK'}{FK} = \boxed{\frac{۱}{۲}}$

$\frac{|\sin\alpha|}{\cos\alpha} = -\tan\alpha \Rightarrow |\sin\alpha| = -\sin\alpha \Rightarrow \sin\alpha < ۰$ — ۱۰

$\frac{۱}{|\cos\alpha|} - \tan\alpha = \frac{۱+\sin\alpha}{|\cos\alpha|}$

$\cos\alpha > ۰$: $\frac{۱}{\cos\alpha} - \frac{\sin\alpha}{\cos\alpha} = \frac{۱+\sin\alpha}{\cos\alpha} \Rightarrow \frac{۱-\sin\alpha}{\cos\alpha} = \frac{۱+\sin\alpha}{\cos\alpha}$ ✗

$\cos\alpha < ۰$: $\frac{۱}{-\cos\alpha} - \frac{\sin\alpha}{\cos\alpha} = \frac{۱+\sin\alpha}{-\cos\alpha} \Rightarrow \frac{-۱-\sin\alpha}{\cos\alpha} = -\frac{۱+\sin\alpha}{\cos\alpha}$ ✓

$\Rightarrow \begin{cases} \sin\alpha < ۰ \\ \cos\alpha < ۰ \end{cases} \Rightarrow$ ربع سوم