باران عباسی — ۲۰ عالی — تکلیف ۱۸ — دهم ریاضی - B

۱)

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

ب) $\tan\frac{5\pi}{4}\ \sin\frac{5\pi}{3} + \cos\frac{4\pi}{3} = \left(\frac{-\sqrt{3}}{2}\times\frac{\sqrt{3}}{2}\right) + \left(\frac{-1}{2}\right) \longrightarrow \frac{1}{2} - \frac{1}{2} = 0$

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۲)

$\cot = 4 \longrightarrow \cos = 4\sin$

$\frac{12\sin x - \sin x}{4\sin x + \sin x} = \frac{11\sin x}{5\sin x} = \frac{11}{5}$

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۳)

$\sin = 2\cos$

ربع سوم $\begin{cases} \cos \longrightarrow - \\ \sin \longrightarrow - \end{cases}$

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

$(2\cos)^2 + \cos^2 = 1$

$4\cos^2 + \cos^2 = 1 \longrightarrow 5\cos^2 = 1 \longrightarrow \cos^2 = \frac{1}{5}$

$\cos = \sqrt{\frac{1}{5}} = \frac{1}{\sqrt{5}} \longrightarrow (-)\frac{\sqrt{5}}{5}$ (ربع سوم)

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۴)

الف) $\cos(\alpha+\beta) = \cos A\cos\beta - \sin A\sin\beta$ $\qquad \cos\frac{11\pi}{4} = \cos\frac{3\pi}{4}$

$\cos\left(\frac{3\pi}{4}+\alpha\right) = \left(\frac{-\sqrt{2}}{2}\right)\left(\frac{-7\sqrt{2}}{10}\right) - \left(\frac{\sqrt{2}}{2}\right)\left(\frac{\sqrt{2}}{10}\right) = \frac{6}{10} = \frac{3}{5}$

(ربع دوم ← منفی: $\frac{7}{10}$ ؛ $\frac{1}{10}$)

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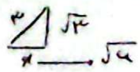
ب) $\sin\left(\frac{5\pi}{4}+\alpha\right) = \left(\frac{-\sqrt{2}}{2}\right)\left(\frac{7}{5\sqrt{2}}\right) + \left(\frac{1}{5\sqrt{2}}\right)\left(\frac{-\sqrt{2}}{2}\right) = \frac{-7}{10} - \frac{1}{10} = \frac{-8}{10} = \frac{-4}{5}$

۵)

$2\sin^2 + \cos^2 = \frac{4}{3} \longrightarrow \sin^2 + \cos^2 = 1 \Longrightarrow \sin^2 = \frac{1}{3} \longrightarrow \sin = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$

$\tan^2 = \frac{\sin^2}{\cos^2} = \frac{\left(\frac{1}{\sqrt{3}}\right)^2}{\left(\frac{\sqrt{6}}{3}\right)^2} = \frac{\frac{1}{3}}{\frac{6}{9}} = \frac{1}{2}$



$\cos = \frac{\sqrt{6}}{3}$

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$\frac{1}{2} \times 6 \times \sqrt{3} \times \sin\alpha = 4,5$

$3\sqrt{3} \times \sin\alpha = 4,5 \longrightarrow \frac{\frac{9}{2}}{\frac{3\sqrt{3}}{1}} = \sin\alpha = \frac{3}{2\sqrt{3}} \longrightarrow \frac{3\sqrt{3}}{6} \longrightarrow \frac{\sqrt{3}}{2} \longrightarrow 60, 120$

$\frac{120}{60} = 2$ ✓

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$2x \times 3x \times \sin 30 \times 2 = 54 \longrightarrow 108 = 6x^2 \longrightarrow x = 3\sqrt{2}$

$(2 \times 6\sqrt{2}) + (9\sqrt{2} \times 2) \longrightarrow 12\sqrt{2} + 18\sqrt{2} = 30\sqrt{2}$ ✓

$\downarrow$ $2 \times 3\sqrt{2}$ $\quad$ $\downarrow$ $3 \times 3\sqrt{2}$ ✓

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$\hat{ABC} = 5 \times 7 \times \frac{\sin\alpha}{2} = \frac{35}{2} \sin\alpha = 17,5 \sin\alpha$

$ADE = 4 \times 7 \times \frac{\sin\alpha}{2} \longrightarrow 14 \sin\alpha$

$17,5 - 14 = 3,5$

$3,5x = 1,75 \longrightarrow x = \frac{1}{2}$ (x = $\sin\alpha$)

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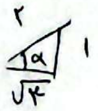

$\tan\alpha = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$ ✓

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$\frac{BN}{BC} = \frac{4}{5}$

$CN + NB = BC$

مساحت ها ← مثلثی با اضلاع ← ارتفاع ها برابر

نسبت مساحت ۲ مثلث برابر ضرب نسبت قسمت های ۲ ضلع است

پس: $\hat{ABC} = 4\hat{BMN} \longrightarrow \frac{BMN}{ABC} = \frac{BM}{AB} \times \frac{BN}{BC}$ ($\frac{BN}{BC} = \frac{4}{5}$, $\frac{BMN}{ABC} = \frac{1}{4}$)

$\frac{BM}{AB} = \frac{5}{9} \longrightarrow BM = \frac{5}{9}$

AB را ۱ در نظر گرفتیم

$AM = 1 - BM = \frac{4}{9}$ ✓ $\quad \frac{BM}{AM} = \frac{\frac{5}{9}}{\frac{4}{9}} = \frac{5}{4}$

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۱۰

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

$\frac{1}{\sqrt{\cos^2\alpha}} - \tan\alpha = \frac{1+\sin}{|\cos\alpha|} = \frac{1}{|\cos|} - \frac{\sin}{\cos} = \frac{1+\sin}{\cos} \quad \times |\cos| \quad 1 + \sin\left(\frac{|\cos|}{\cos}\right)$

$0 > \cos \longleftarrow 1 - (-\sin)$ $\quad$ منفی

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ربع دوم ✓