بارانِ قاسمی — تکلیف شماره ۱۸

Subject: Year: Month: Day:

(۱ الف) $\tan(2\pi-\frac{\pi}{4})+\sin(4\pi-\frac{\pi}{6})\times\cos(2\pi+\frac{\pi}{6})\to -\tan(\frac{\pi}{4})+(-\sin\frac{\pi}{6}\times-\cos\frac{\pi}{6})=-1+\frac{1}{2}=-\frac{1}{2}$

ب) $\tan(2\pi-\frac{\pi}{6})\times\sin(4\pi-\frac{\pi}{6})+\cos(2\pi+\frac{\pi}{6})=[-\tan(\frac{\pi}{6})\times-\sin(\frac{\pi}{6})]-\cos(\frac{\pi}{6})\Rightarrow\frac{1}{2}-\frac{1}{2}=0$

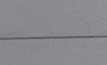
(۲ $\xrightarrow{\div\sin}\ \frac{2\cot x-1}{\cot x+1}=\frac{3\times4-1}{4+1}=\frac{11}{5}=2/2$

(۳ $(2\cos\alpha)^2+\cos^2\alpha=1\to 4\cos^2\alpha+\cos^2\alpha=1\quad 5\cos^2\alpha=1\quad\cos^2\alpha=\frac{1}{5}\quad\cos\alpha=\pm\frac{\sqrt{5}}{5}$

(۴ الف) $1-\frac{2}{10}=\frac{98}{100}\longrightarrow\frac{\sqrt{98}}{10}\to\frac{7\sqrt{2}}{10}\quad\cos(\alpha+\frac{2\pi}{4})=\cos\alpha\cos\frac{2\pi}{4}-\sin\alpha\sin\frac{2\pi}{4}$

$-\frac{7\sqrt{2}}{10}\times-\frac{\sqrt{2}}{2}-\frac{\sqrt{2}}{10}\times\frac{\sqrt{2}}{2}=\frac{3}{5}$

ب) $\frac{12\pi}{4}=2\pi+\frac{\pi}{4}\to-\sin(\frac{\pi}{4}+\alpha)\quad\sin\frac{\pi}{4}\cos\alpha+\cos\frac{\pi}{4}\sin\alpha\quad\frac{\sqrt{2}}{2}\times\frac{7}{\sqrt{98}}+\frac{\sqrt{2}}{2}\times\frac{1}{\sqrt{98}}=\frac{4}{7}$



$\sin(12\frac{2\pi}{4}+\alpha)=-\frac{1}{5}$

(۵ $\sin^2x=1-\cos^2x\longrightarrow 2(1-\cos^2x)+\cos^2x=\frac{1}{2}\to\cos^2x=\frac{3}{2}\quad 1+\tan^2x=\frac{1}{\cos^2x}\to 1+\tan^2x=\frac{3}{2}\quad\tan^2x=\frac{1}{2}$

(۶ $S=\frac{1}{2}\times6\times\sqrt{2}\times\sin\alpha=4/5\quad 2\sqrt{2}\sin\alpha=4/5\quad\sin\alpha=\frac{4\sqrt{5}}{2\sqrt{2}}=\frac{\sqrt{10}}{2}\begin{cases}\alpha=60\\ \alpha=120\end{cases}\Rightarrow\frac{120}{60}=2$ بار

(۷ $(\frac{1}{2}\times2\times2\times2\times\sin60^\circ)\times2=8\quad 6x^2\times\frac{1}{2}=3x^2=8\quad x=\pm\sqrt{18}\quad P=(3\sqrt{18}+2\sqrt{18})\times2=10\sqrt{18}$

(۸ $S_{ABC}=\frac{1}{2}\times5\times7\times\sin\hat{A}=\frac{35}{2}\sin\hat{A}=17/5\sin\hat{A}$

$S_{ADE}=\frac{1}{2}\times4\times7\times\sin\hat{A}=14\sin\hat{A}\qquad 17/5\sin\hat{A}-14\sin\hat{A}=17/5\qquad 3\sin\hat{A}=17/5$

$\sin\hat{A}=0/5=\frac{1}{2}\qquad\hat{A}=30\Rightarrow$ جواب $\tan30^\circ=\frac{\sqrt{3}}{3}$

(۹ $2BN=3NC\to BN=\frac{3}{2}NC\Rightarrow\frac{3}{2}NC+NC=\frac{5}{2}NC\qquad S_{ABC}=\frac{1}{2}\times\frac{5}{2}NC\times AB\times\sin\hat{B}$

$\to 2(\underbrace{\frac{1}{2}\times\frac{2}{5}NC\times MB\times\sin\hat{B}}_{S_{BMN}})\quad\underbrace{NC\times AB}_{BM\times AM}\times\sin\hat{B}=\frac{9}{4}NC\times MB\times\sin\hat{B}\quad\frac{5}{4}AM=MB\quad\frac{BM}{AM}=\frac{5}{4}$

Pasha

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$\frac{|\sin\alpha|}{\cos\alpha} = -\frac{1}{\cot\alpha} \rightarrow \frac{|\sin\alpha|}{\cos\alpha} = -\frac{\sin\alpha}{\cos\alpha} \rightarrow \sin\alpha < 0$ (1.

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

$\sqrt{\cos^2\alpha} \rightarrow |\cos\alpha|$

$\cos\alpha > 0$: $\tan\alpha = -\tan\alpha$ ✗

$\cos\alpha < 0$: $\tan\alpha = \tan\alpha$ ✓

$\rightarrow \cos\alpha < 0 \wedge \sin\alpha < 0 \rightarrow$ psm