Date No

بنام خدا

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①

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

ب) $\tan\frac{5\pi}{6}\sin\frac{5\pi}{3}+\cos\frac{4\pi}{3}\rightarrow\left(\frac{\sqrt{3}}{3}\times-\frac{\sqrt{3}}{2}\right)-\frac{1}{2}=\boxed{0}$

②

[illegible]

$\cos x=2a \,/\, \sin x=1a$

$\frac{3(2a)+1a}{4a+1a}=\frac{11a}{5a}=\boxed{\frac{11}{5}}$

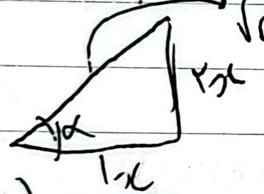
③

$\sin x=2\cos x \qquad \tan\alpha=2$

Cos- Sin-

$\cos=?$

$\cos\alpha=-\frac{1}{\sqrt{5}}=\boxed{\frac{-\sqrt{5}}{5}}$



④

الف) α ربع دوم

$\sin\alpha=\frac{\sqrt{2}}{10}$

$\cos\alpha=\frac{7\sqrt{2}}{10}$

$\cos\frac{3\pi}{4}\cos\alpha-\sin\frac{3\pi}{4}\sin\alpha\rightarrow\frac{7}{10}-\frac{1}{10}=\frac{6}{10}=\boxed{\frac{3}{5}}$

[illegible]

ب) α ربع سوم

$\tan\alpha=\frac{1}{7}$

$\sin\alpha=\frac{1x}{5\sqrt{2}x}=\frac{\sqrt{2}}{10}\ ,\ \cos\alpha=\frac{7\sqrt{2}}{10}$

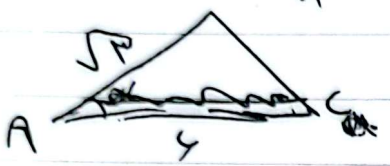
$\sin\frac{5\pi}{4}\cos\alpha+\sin\alpha\cos\frac{5\pi}{4}\rightarrow\left(\frac{-\sqrt{2}}{2}\right)\left(\frac{7\sqrt{2}}{10}+\frac{\sqrt{2}}{10}\right)=\frac{-8}{10}=\boxed{-\frac{4}{5}}$

dotnote

$\sin^2 x + \sin^2 x + \cos^2 x = \frac{5}{3} \rightarrow \sin x = \frac{1}{\sqrt{3}}$ ①

$\cos^2 x = \frac{2}{3} \rightarrow \cos x = \frac{\sqrt{2}}{\sqrt{3}}$

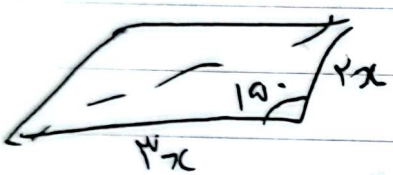
$\tan^2 x = \left(\frac{\frac{1}{\sqrt{3}}}{\frac{\sqrt{2}}{\sqrt{3}}}\right) = \frac{1}{2}$



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

$\sin\alpha = \frac{9}{2} \times \frac{1}{3\sqrt{3}} = \frac{3}{2\sqrt{3}} = \frac{\sqrt{3}}{2} \rightarrow \alpha = 60°$

$\alpha = 120°$



$S_{\square} = 2\left(\frac{1}{2} \times 2x \times 3x \times \sin 120°\right) = 6$ ⑤

$P_{\square} = 2\left(2\sqrt{3} + 3(3\sqrt{2})\right) = 30\sqrt{2}$

$x = 3\sqrt{2}$

$S_{ABC} - S_{ADE} = 1,75$ ④

$\left(\frac{1}{2} \times 8 \times 5 \times \sin A\right) - \left(\frac{1}{2} \times 6 \times 5 \times \sin A\right) = 1,75$

$\frac{1}{2}\sin A(40 - 30) = 1,75 \rightarrow \sin A = \frac{1}{2} \rightarrow \hat{A} = 30°$

$\tan 30° = \frac{\sqrt{3}}{3}$

$\frac{S_{BMN}}{S_{ABC}} = \frac{1}{3} \rightarrow \frac{\frac{1}{2} \times BM \times BN \times \sin B}{\frac{1}{2} \times AB \times BC \times \sin B} = \frac{1}{3}$ ⑨

$\frac{BM}{AB} = \frac{2}{9}$ $\quad \frac{BM}{AM} = \frac{BM}{(AB - BM)} = \frac{2}{7}$ $\quad \frac{BM}{AB} \times \frac{BN}{BC} = \frac{1}{3}$

$\frac{|\sin\alpha|}{\cos\alpha} = -\frac{1}{\cot} = -\frac{1}{\frac{\cos\alpha}{\sin\alpha}} = -\frac{\sin\alpha}{\cos\alpha} \rightarrow \sin\alpha < 0$ ⑩

$\frac{1}{-\cos\alpha} \cdot \frac{\sin\alpha}{\cos\alpha} = \frac{1 + \sin\alpha}{-\cos\alpha}$ ✓ (α ← ربع سوم)