

1. Nov/2022/Paper_9709_31/No.4

Solve the equation $\tan(x + 45^\circ) = 2 \cot x$ for $0^\circ < x < 180^\circ$.

[5]

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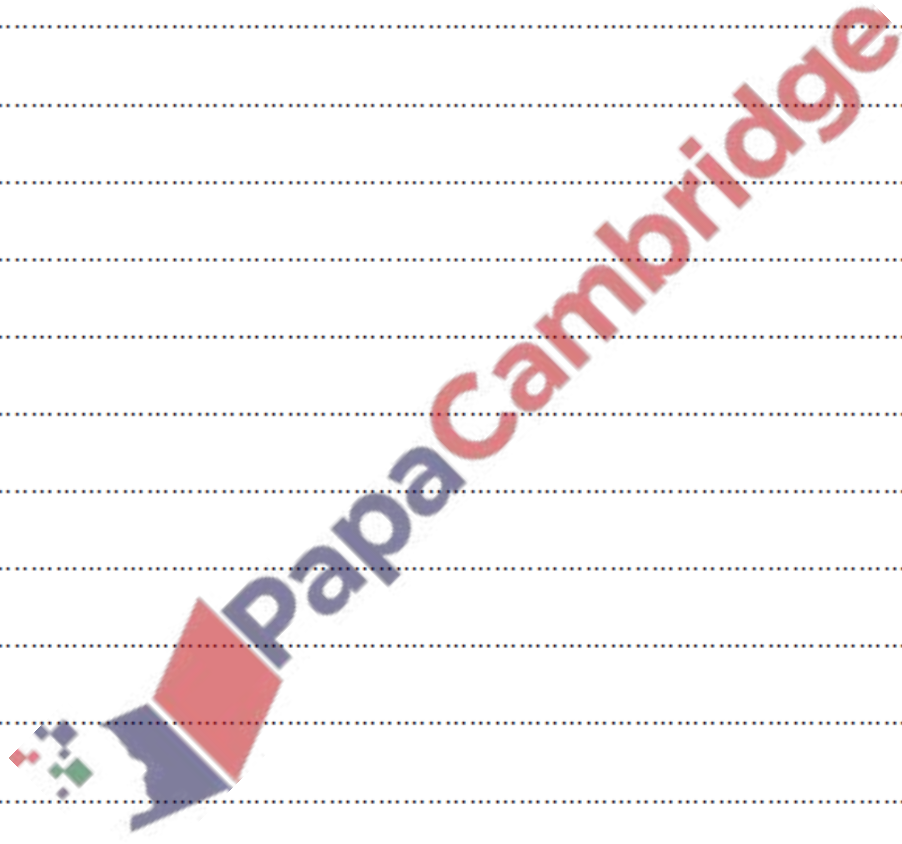
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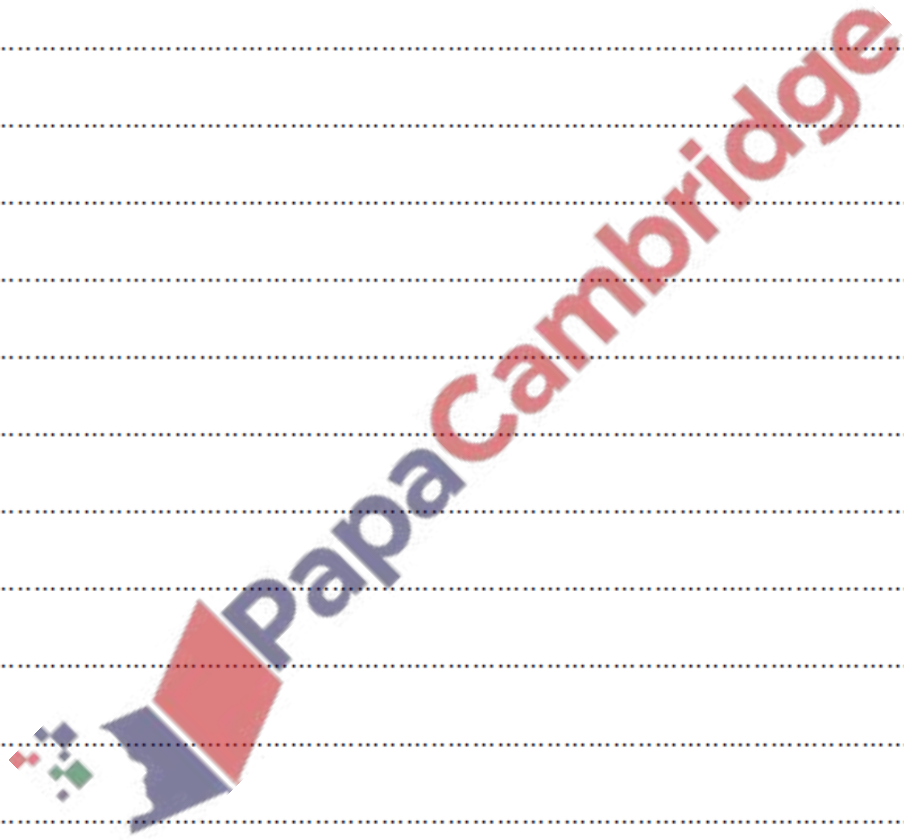
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(a) Prove the identity $\cos 4\theta + 4 \cos 2\theta + 3 \equiv 8 \cos^4 \theta$.

[4]



- (a) Express $4 \cos x - \sin x$ in the form $R \cos(x + \alpha)$, where $R > 0$ and $0^\circ < \alpha < 90^\circ$. State the exact value of R and give α correct to 2 decimal places. [3]

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- (b) Hence solve the equation $4 \cos 2x - \sin 2x = 3$ for $0^\circ < x < 180^\circ$. [5]

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(b) Hence solve the equation $\sqrt{5} \sec 2x + \tan 2x = 4$, for $0^\circ < x < 180^\circ$.

[4]

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