

3 (a) Solve the equation $|2x - 3| = |5x + 2|$. [3]

[illegible]

(b) Hence solve the equation $|2 \sec \theta - 3| = |5 \sec \theta + 2|$ for $\pi < \theta < 2\pi$. Give your answer correct to 3 significant figures. [3]

[illegible]

4 Solve the equation $\cot \theta \tan(\theta + 45^\circ) = 7$ for $0^\circ < \theta < 90^\circ$. [5]

This image shows a full page of white paper with horizontal dashed lines, typical of primary school handwriting practice paper. The lines are evenly spaced and run across the entire width of the page. There are no margins, text, or other markings present.

[illegible]

7 (a) Prove that $\sin^2 2x + 4\cos^2 x \cos 2x \equiv 4\cos^4 x$. [3]

This image shows a full page of primary-ruled paper. It features multiple sets of horizontal lines designed to guide handwriting. Each set consists of three lines: two solid outer lines and a dashed middle line. These sets are repeated down the entire page, providing ample space for practicing letter formation and alignment. The paper is otherwise blank, with no text or other markings.

③

[illegible]
$$\sin^2 2x + 4 \cos^2 x \cos 2x + 5 = k$$

has no real solutions. [2]

[illegible]

... 4

Additional page

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- 7 (a) Express $4 \cos \theta \sin(\theta + 30^\circ)$ in the form $R \cos(2\theta - \alpha) + k$, where $R > 0$, $0^\circ < \alpha < 90^\circ$ and k is a constant. [6]

[6]

- (b)** Hence solve the equation

$$12 \cos 2\phi \sin (2\phi + 30^\circ) = 5$$

for $0^\circ < \phi < 90^\circ$.

[5]

For the answer to any question, the question number must be clearly

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