9 **(a)** Solve the equation $3\sec 3x = \sqrt{3}\operatorname{cosec} 3x$ for $-120° \leqslant x \leqslant 120°$. [5]

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(b) Solve the equation $2\cos\left(y+\frac{\pi}{3}\right)\sin\left(y+\frac{\pi}{3}\right)=\sin\left(y+\frac{\pi}{3}\right)$ for $0 \leqslant y < 2\pi$. [5]

Question 10 is printed on the next page.

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10 The first three terms, in descending powers of x, in the expansion of $\left(3x^2 - a\right)^n \left(1 + \frac{1}{x^2}\right)^2$ can be written as $729x^{12} + 972x^{10} + bx^8$, where a, b and n are constants.

Find the values of a, b and n. [9]

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