2 **(a)** Expand $(2-3x)^4$, evaluating all of the coefficients. [4]

(b) The sum of the first three terms in ascending powers of x in the expansion of $(2-3x)^4\left(1+\frac{a}{x}\right)$ is $\frac{32}{x}+b+cx$, where a, b and c are integers. Find the values of each of a, b and c. [4]

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3 **(a)** Show that $\frac{1}{\sec x - 1} + \frac{1}{\sec x + 1} = 2 \cot x \operatorname{cosec} x$. [4]

(b) Hence solve the equation $\frac{1}{\sec x - 1} + \frac{1}{\sec x + 1} = 3 \sec x$ for $0° < x < 360°$. [4]