

Answer all six questions from this section.

Question 1

(25 marks)

- (a) $(-4 + 3i)$ is one root of the equation $az^2 + bz + c = 0$, where $a, b, c \in \mathbb{R}$, and $i^2 = -1$. Write the other root.

- (b) Use De Moivre's Theorem to express $(1 + i)^8$ in its simplest form.

- (c) $(1 + i)$ is a root of the equation $z^2 + (-2 + i)z + 3 - i = 0$. Find its other root in the form $m + ni$, where $m, n \in \mathbb{R}$, and $i^2 = -1$.

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