Roots of Cubics

By the Fundamental Theorem of Algebra, a cubic equation $ax^3 + bx^2 + cx + d = 0$ always has 3 (potentially repeated) roots, α, β, γ. We saw in the previous chapters that these could be…

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Example

Find a cubic equation with roots 2, -1 and -3.

Example

1. α, β **and** γ **are the roots of the cubic equation** $2x^3 + 3x^2 - 4x + 2 = 0$. **Without solving the equation, find the values of:**

(a) $\alpha + \beta + \gamma$

(b) $\alpha\beta + \beta\gamma + \gamma\alpha$

(c) $\alpha\beta\gamma$

(d) $\frac{1}{\alpha} + \frac{1}{\beta} + \frac{1}{\gamma}$

2. **The roots of a cubic equation $ax^3 + bx^2 + cx + d = 0$ are $\alpha = 1 - 2i$, $\beta = 1 + 2i$ and $\gamma = 2$. Find integers values for a, b, c and d.**

Ex 4b pg 58-59