Practice worksheet | Complex Numbers

Conjugate-root results for real polynomials

Name: _____ Date: _____

6 questions | 15 marks

1. Find a real monic quadratic with roots $3 \pm i$. [2 marks]

2. A monic real quartic has roots i, $2 + i$ and their conjugates. Factorise it over $\mathbb{R}$. [2 marks]

3. A monic real cubic has root $1 + i$ and constant term -6. Find the remaining real root. [3 marks]

4. Explain why a real polynomial of degree 5 cannot have exactly one non-real root counting multiplicity. [3 marks]

5. For real a and b, $z^2 + az + b$ has root $1 - \sqrt{2}i$. Find a and b. [2 marks]

6. Test the claim: if i is a root of $P(z) = z - i$, then $-i$ is also a root. [3 marks]