Practice worksheet | Complex Numbers

Powers and roots

Name: _____ Date: _____

6 questions | 15 marks

1. Solve $z^2 = -9$. [2 marks]

2. List the cube roots of 8 in polar form. [2 marks]

3. Find all solutions of $z^4 = -16$. [3 marks]

4. Write the roots of $z^3 = 8i$ in principal-argument polar form. [3 marks]

5. Explain why $k = 4$ gives no new root in $z_k = 2\text{cis}(\frac{\pi}{8} + \frac{k\pi}{2})$. [2 marks]

6. The three cube roots of a nonzero number form an equilateral triangle. Explain using arguments. [3 marks]