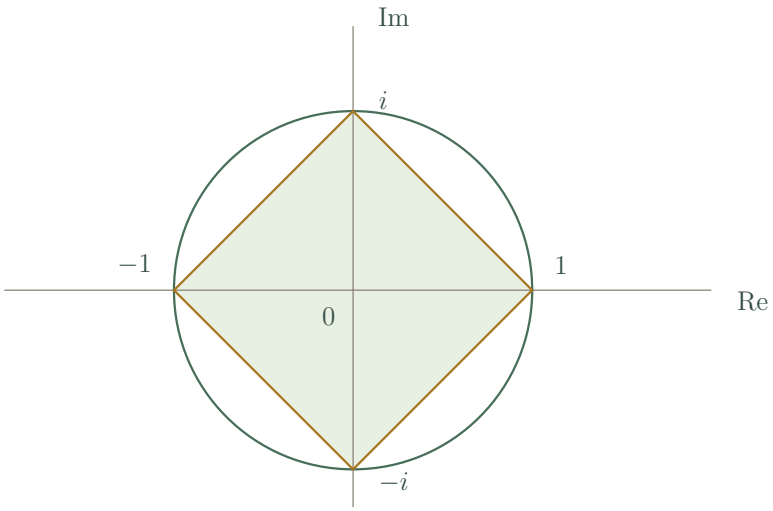
# Roots of unity

Name: _____ Date: _____

6 questions | 14 marks

**1.** List all fourth roots of unity in Cartesian form. [2 marks]




**2.** Let $\omega = \text{cis}(\frac{2\pi}{3})$. Simplify $\omega^{11}$. [2 marks]

**3.** For $\omega = \text{cis}(\frac{2\pi}{3})$, show that $\overline{\omega} = \omega^2$. [2 marks]

**4.** Find the product of all fourth roots of unity. [2 marks]

**5.** Show that the sum of the five fifth roots of unity is zero. [3 marks]

**6.** A regular hexagon has vertices at the sixth roots of unity. Find its perimeter. [3 marks]