

Answer on Question #42425 – Math – Complex Analysis

$$z_1 = 7(\cos 40^\circ + i \cdot \sin 40^\circ) = 7\left(\cos \frac{2\pi}{9} + i \cdot \sin \frac{2\pi}{9}\right) = 7e^{i\frac{2\pi}{9}} \text{ (using Euler's formula)}$$

$$z_2 = 6(\cos 145^\circ + i \cdot \sin 145^\circ) = 6\left(\cos \frac{29\pi}{36} + i \cdot \sin \frac{29\pi}{36}\right) = 6e^{i\frac{29\pi}{36}}$$

$$\begin{aligned} z_1 z_2 &= 7e^{i\frac{2\pi}{9}} \times 6e^{i\frac{29\pi}{36}} = 7 \cdot 6 \cdot e^{i\frac{2\pi}{9}} \cdot e^{i\frac{29\pi}{36}} = 42 \cdot e^{i\frac{8\pi}{36} + i\frac{29\pi}{36}} = 42 \cdot e^{i\frac{37\pi}{36}} = 42\left(\cos \frac{37\pi}{36} + i \sin \frac{37\pi}{36}\right) \\ &= -42\left(\cos \frac{\pi}{36} + i \sin \frac{\pi}{36}\right) = -42(\cos 5^\circ + i \sin 5^\circ) \end{aligned}$$