

IX

$$z^4 = 8(-1 + i\sqrt{3})$$

9 $\sqrt[4]{8}$ $\sqrt[4]{2}$ $\sqrt[4]{2}$ $\sqrt[4]{2}$ $\sqrt[4]{2}$ $|z|^4 = 8 \cdot 2 = 16 = 2^4$

$\sqrt[4]{2}$ $\sqrt[4]{2}$ $\sqrt[4]{2}$ $\sqrt[4]{2}$ $|z| = 2 \sqrt[4]{2}$ $\sqrt[4]{2}$ $\omega = \frac{\pi}{2}$ $\sqrt[4]{2}$ $\sqrt[4]{2}$

$$\omega^4 = \frac{-1 + i\sqrt{3}}{2} = \cos \frac{\pi}{3} + i \sin \frac{\pi}{3}$$

$\sqrt[4]{2}$ $|w| = 1$ $\sqrt[4]{2}$

$$w = \cos \theta + i \sin \theta$$

$$0 \leq \theta < 2\pi$$

$\sqrt[4]{2}$ $w^4 = 1$ $\sqrt[4]{2}$

$$\cos 4\theta + i \sin 4\theta = \cos \frac{\pi}{3} + i \sin \frac{\pi}{3}$$

$$0 \leq 4\theta < 8\pi$$

$\sqrt[4]{2}$ $\sqrt[4]{2}$

$$4\theta = \frac{\pi}{3}, \frac{7\pi}{3}, \frac{13\pi}{3}, \frac{19\pi}{3}$$

$\sqrt[4]{2}$ $\sqrt[4]{2}$ $\sqrt[4]{2}$

$$\theta = \frac{\pi}{12}, \frac{7\pi}{12}, \frac{13\pi}{12}, \frac{19\pi}{12}$$

$\sqrt[4]{2}$

$$z = 2 e^{i\frac{\pi}{12}}, 2 e^{i\frac{7\pi}{12}}, 2 e^{i\frac{13\pi}{12}}, 2 e^{i\frac{19\pi}{12}}$$