

$$7. \quad z = \cos 200^\circ + i \sin 200^\circ \quad w = \cos 120^\circ + i \sin 120^\circ \\ = 1(\cos 200^\circ + i \sin 200^\circ) \quad w = 1(\cos 120^\circ + i \sin 120^\circ)$$

$$z \cdot w = 1 \cdot 1 (\cos (200^\circ + 120^\circ) + i \sin (200^\circ + 120^\circ)) \\ = \cos 320^\circ + i \sin 320^\circ$$

$$\frac{z}{w} = \frac{1}{1} (\cos (200^\circ - 120^\circ) + i \sin (200^\circ - 120^\circ)) \\ = \cos 80^\circ + i \sin 80^\circ$$

$$8. \quad z = 8 \left(\cos \frac{\pi}{4} + i \sin \frac{\pi}{4} \right) \quad w = 4 \left(\cos \frac{3\pi}{8} + i \sin \frac{3\pi}{8} \right)$$

$$z \cdot w = 8 \cdot 4 \left(\cos \left(\frac{\pi}{4} + \frac{3\pi}{8} \right) + i \sin \left(\frac{\pi}{4} + \frac{3\pi}{8} \right) \right) \\ = 32 \left(\cos \left(\frac{2\pi}{8} + \frac{3\pi}{8} \right) + i \sin \left(\frac{2\pi}{8} + \frac{3\pi}{8} \right) \right) \\ = 32 \left(\cos \frac{5\pi}{8} + i \sin \frac{5\pi}{8} \right)$$

$$\frac{z}{w} = \frac{8}{4} \left(\cos \left(\frac{\pi}{4} - \frac{3\pi}{8} \right) + i \sin \left(\frac{\pi}{4} - \frac{3\pi}{8} \right) \right) \\ = 2 \left(\cos \left(\frac{2\pi}{8} - \frac{3\pi}{8} \right) + i \sin \left(\frac{2\pi}{8} - \frac{3\pi}{8} \right) \right) \\ = 2 \left(\cos \left(-\frac{\pi}{8} \right) + i \sin \left(-\frac{\pi}{8} \right) \right) \\ = 2 \left(\cos \left(-\frac{\pi}{8} + 2\pi \right) + i \sin \left(-\frac{\pi}{8} + 2\pi \right) \right) \\ = 2 \left(\cos \frac{15\pi}{8} + i \sin \frac{15\pi}{8} \right)$$