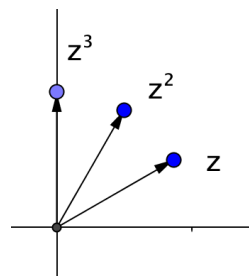


11.3

$$1. z = 1\text{cis}30^\circ, \quad z^2 = 1\text{cis}60^\circ, \quad z^3 = 1\text{cis}90^\circ$$



$$3a. z = \sqrt{2}\text{cis}315^\circ$$

$$z^{-1} = \frac{1}{2} + \frac{1}{2}i$$

$$z^0 = 1$$

$$z = 1 + i$$

$$z^2 = -2i \quad (\text{graph them})$$

$$z^3 = -2 - 2i$$

$$z^4 = -4$$

$$z^5 = -4 + 4i$$

$$z^6 = 8i$$

$$z^7 = 8 + 8i$$

$$z^8 = 16$$

$$b. z^{12} = -64$$

$$4a. z = 2\text{cis}60^\circ$$

$$z^{-2} = .25\text{cis} - 120^\circ$$

$$z^{-1} = .5\text{cis}(-60^\circ)$$

$$z^0 = 1\text{cis}0^\circ$$

$$z = 2\text{cis}60^\circ$$

$$z^2 = 4\text{cis}120^\circ \quad (\text{graph them})$$

$$z^3 = 8\text{cis}180^\circ$$

$$z^4 = 16\text{cis}240^\circ$$

$$z^{18} = 2^{18}\text{cis}(18 \cdot 60^\circ) = 2^{18}\text{cis}(0^\circ)$$

$$6. z^3 = 2\sqrt{2}\text{cis}675^\circ = 2 - 2i$$

$$8. |z| = r = 1$$