

3.83  
k8

$$q = iz$$

$$S_6 = 0 = \frac{1 - (iz)^6 - 1}{iz - 1} \rightarrow (iz)^6 = 1$$

$$-z^6 = 1 \rightarrow z^6 = -1 = \text{cis } 180 = \text{cis } \pi$$

$$z_k = \text{cis} \left( \frac{\pi}{6} + \frac{\pi}{3}k \right) \quad k = 0, 1, 2, 3, 4, 5$$

√00) pñ njxp 0 1) k=4 njf jnnp

3.83  
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$$\left( \frac{1+i\sqrt{3}}{1-i\sqrt{3}} \right)^3 = \left( \frac{2\text{cis } 60}{2\text{cis } (-60)} \right)^3 = (\text{cis } 120)^3 = 1$$

$$0 = (iz)^5 - z = iz^5 - z = z(iz^4 - 1) = 0$$

$$z = 0 \quad \downarrow \quad z^4 = \frac{1}{i} = \frac{-i}{-1} = -i = \text{cis } 270$$

$$z_k = \text{cis} \left( \frac{3\pi}{4} + \frac{\pi}{2}k \right) \quad k = 0, 1, 2, 3$$