

$$h) z^3 + i = 0$$

$$z^3 = -i$$

$$z^3 = -i$$

$$r^3 \cos(3\theta) = 0$$

$$\cos(3\theta) = 0$$

$$3\theta = \frac{\pi}{2} + k\pi$$

$$\theta = \frac{\pi}{6} + k\pi/3$$

$$r^3 \sin 3\theta = -1$$

$$r^3 \sin [3(\pi/6 + k\pi/3)] = -1$$

$$r^3 \sin(\pi/2 + k\pi) = -1$$

$$\text{Since } r^3 > 0$$

$$\sin(\pi/2 + k\pi) = -1, \text{ for this}$$

$$\text{to be true}$$

$$k = (2n+1)$$

||

$$z^3 - i = 0$$

$$z^3 = i$$

$$r^3 \cos(3\theta) = 0$$

$$r^3 \neq 0$$

$$\cos(3\theta) = 0$$

$$3\theta = \pi/2 + k\pi$$

$$\theta = \pi/6 + k\pi/3$$

$$r^3 \sin(3\theta) = 1$$

$$r^3 \sin(\pi/2 + k\pi) = 1$$

$$r^3 > 0$$

$$\sin(\pi/2 + k\pi) = 1$$

$$k = 2m, m \in \mathbb{Z}, m \geq 0$$

$$\theta = \pi/6 + m\pi/3$$

$$r^3 = 1$$

$$r = 1$$