

Exercice 92 p 25-1

1) a) Voir Savoir-Faire

b) (E) : $z^3 + 8 = 0 \Leftrightarrow z^3 = -8$

$$z^3 + 8 = (z + 2)(z^2 - 2z + 4) = 0$$

$$\downarrow \qquad \qquad \downarrow$$
$$z = -2 \quad \text{ou} \quad z^2 - 2z + 4 = 0$$

$$\Delta = -12$$

$$z_1 = \frac{2 + i\sqrt{12}}{2} = \frac{2 + i2\sqrt{3}}{2} = 1 + i\sqrt{3}$$

$$z_2 = 1 - i\sqrt{3}$$

• c) $z_1 = 1 + i\sqrt{3}$

$$|z_1| = \sqrt{(1)^2 + (\sqrt{3})^2} = 2$$

$$\cos \theta = \frac{1}{2} \Rightarrow \theta = \frac{\pi}{3} \text{ ou } -\frac{\pi}{3}$$

$$\sin \theta > 0 \Rightarrow \theta = \frac{\pi}{3} \quad \text{Alors } z_1 = 2e^{i\pi/3}$$

• $z_2 = \overline{z_1}$; alors $z_2 = 2e^{-i\pi/3}$

$$-2 = 2e^{i\pi} \text{ donc } \mathcal{S} = \left\{ 2e^{i\pi}, 2e^{i\pi/3}, 2e^{-i\pi/3} \right\}$$