

Exercice 01.9

$$\begin{aligned} 2^{\circ}) \quad 1 + \bar{j} + \bar{j}^2 &= 1 + \left(-\frac{1}{2} - i\frac{\sqrt{3}}{2}\right) + \left(-\frac{1}{2} - i\frac{\sqrt{3}}{2}\right)^2 \\ &= 1 - \frac{1}{2} - i\frac{\sqrt{3}}{2} + \frac{1}{4} + i\frac{\sqrt{3}}{2} + \left(i\frac{\sqrt{3}}{2}\right)^2 \\ &= \frac{1}{2} - i\frac{\sqrt{3}}{2} + i\frac{\sqrt{3}}{2} + \frac{1}{4} - \frac{3}{4} \\ &= \frac{1}{2} + 0 - \frac{1}{2} = 0. \end{aligned}$$