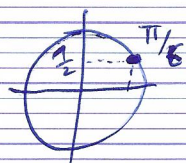


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$$1. \quad c = \frac{3}{2} + \frac{\sqrt{3}}{2}i$$

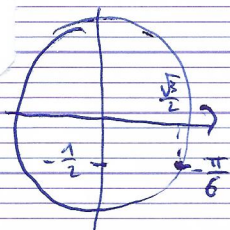
$$d = \frac{\sqrt{3}}{2} e^{-i\frac{\pi}{6}}$$



$$|c| = \sqrt{\left(\frac{3}{2}\right)^2 + \left(\frac{\sqrt{3}}{2}\right)^2} = \sqrt{\frac{9}{4} + \frac{3}{4}} = \sqrt{\frac{12}{4}} = \sqrt{3}$$

$$\arg(c): \begin{cases} \cos \theta = \frac{3/2}{\sqrt{3}} = \frac{3}{2} \times \frac{1}{\sqrt{3}} = \frac{\sqrt{3} \times \sqrt{3}}{2\sqrt{3}} = \frac{\sqrt{3}}{2} \\ \sin \theta = \frac{\sqrt{3}/2}{\sqrt{3}} = \frac{\sqrt{3}}{2} \times \frac{1}{\sqrt{3}} = \frac{1}{2} \end{cases} \Rightarrow \theta = \frac{\pi}{6}$$

$$c = \boxed{\sqrt{3} e^{i\frac{\pi}{6}}}$$



$$d = \frac{\sqrt{3}}{2} e^{-i\frac{\pi}{6}} = \frac{\sqrt{3}}{2} \left[\cos\left(-\frac{\pi}{6}\right) + i \sin\left(-\frac{\pi}{6}\right) \right]$$

$$= \frac{\sqrt{3}}{2} \left[\frac{\sqrt{3}}{2} + i \left(-\frac{1}{2}\right) \right]$$

$$= \frac{\sqrt{3} \times \sqrt{3}}{4} + i \left(-\frac{\sqrt{3}}{2 \times 2}\right) = \boxed{\frac{3}{4} - i \frac{\sqrt{3}}{4}}$$

2.

a)

b) Rappel: $AB = |z_B - z_A|$

Un losange est un quadrilatère qui a ses

4 côtés de même longueur.

Calculons: OB ; BC ; CA et OA :

$$OB = |z_B - z_O| \quad BC = |z_C - z_B|$$

$$OB = |1e^{i\frac{\pi}{3}}|$$

$$BC = \left| \frac{3}{2} + \frac{\sqrt{3}}{2}i - e^{i\frac{\pi}{3}} \right|$$

$$\boxed{OB = 1}$$

$$BC = \left| \frac{3}{2} + \frac{\sqrt{3}}{2}i - \left(\cos\left(\frac{\pi}{3}\right) + i \sin\left(\frac{\pi}{3}\right) \right) \right|$$

$$BC = \left| \frac{3}{2} + \frac{\sqrt{3}}{2}i - \left(\frac{1}{2} + i \frac{\sqrt{3}}{2} \right) \right|$$

$$BC = \left| \frac{3}{2} - \frac{1}{2} + \frac{\sqrt{3}}{2}i - i \frac{\sqrt{3}}{2} \right|$$

$$\boxed{BC = 1}$$

$$CA = |z_A - z_C|$$

$$CA = \left| 1 - \left(\frac{3}{2} + \frac{\sqrt{3}}{2}i \right) \right|$$

$$CA = \left| 1 - \frac{3}{2} - \frac{\sqrt{3}}{2}i \right|$$

$$CA = \left| -\frac{1}{2} - \frac{\sqrt{3}}{2}i \right|$$

$$CA = \sqrt{\left(-\frac{1}{2}\right)^2 + \left(-\frac{\sqrt{3}}{2}\right)^2}$$

$$CA = \sqrt{\frac{1}{4} + \frac{3}{4}}$$

$$\boxed{CA = 1}$$

$$OA = |z_A - z_O|$$

$$OA = |1 - 0|$$

$$OA = |1|$$

$$\boxed{OA = 1}$$

Ainsi $OB = BC = CA = OA$

Donc $OACB$ est un losange

