



(d) On calcule  $z_I = \frac{z_A + z_B}{2} = \frac{2 - \sqrt{2} + i\sqrt{2}}{2}$ .

$$\text{Par suite, } |z_I| = \sqrt{\left(\frac{2 - \sqrt{2}}{2}\right)^2 + \left(\frac{\sqrt{2}}{2}\right)^2} = \dots = \sqrt{2 - \sqrt{2}}.$$

4. On a d'après la question précédente  $z_I = \sqrt{2 - \sqrt{2}} \left( \frac{\sqrt{2 - \sqrt{2}}}{2} + i \frac{\sqrt{2}}{2\sqrt{2 - \sqrt{2}}} \right)$ .

Or  $\sqrt{2 - \sqrt{2}} = |z_I|$  et on sait que  $\arg(z_I) = (\vec{u}; \vec{OI}) = \frac{3\pi}{8}$ .

Ainsi,

$$\cos \frac{3\pi}{8} = \frac{\sqrt{2 - \sqrt{2}}}{2} \quad \text{et} \quad \sin \frac{3\pi}{8} = \frac{\sqrt{2}}{2\sqrt{2 - \sqrt{2}}}$$