

## Chapitre 5 – Pour reprendre contact – Réponse exercice 3 question 2

$$\begin{aligned} \bullet \cos\left(\frac{\pi}{12}\right) &= \cos\left(\frac{\pi}{3} - \frac{\pi}{4}\right) \\ &= \cos\left(\frac{\pi}{3}\right) \cdot \cos\left(\frac{\pi}{4}\right) + \sin\left(\frac{\pi}{3}\right) \cdot \sin\left(\frac{\pi}{4}\right) = \frac{1}{2} \cdot \frac{\sqrt{2}}{2} + \frac{\sqrt{3}}{2} \cdot \frac{\sqrt{2}}{2} \end{aligned}$$

$$\text{d'où } \cos\left(\frac{\pi}{12}\right) = \frac{\sqrt{2} + \sqrt{6}}{4}.$$

$$\begin{aligned} \bullet \sin\left(\frac{\pi}{12}\right) &= \sin\left(\frac{\pi}{3} - \frac{\pi}{4}\right) = \sin\left(\frac{\pi}{3}\right) \cos\left(\frac{\pi}{4}\right) - \sin\left(\frac{\pi}{4}\right) \cos\left(\frac{\pi}{3}\right) \\ &= \frac{\sqrt{3}}{2} \cdot \frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{2} \cdot \frac{1}{2} \end{aligned}$$

$$\text{d'où } \sin\left(\frac{\pi}{12}\right) = \frac{\sqrt{6} - \sqrt{2}}{4}.$$

**Conseil**

On peut vérifier à l'aide du logiciel Xcasfr

$$\begin{array}{|c|} \hline \text{cos(pi/12);sin(pi/12)} \\ \hline \left( \frac{\sqrt{6}+\sqrt{2}}{4}, \frac{\sqrt{6}-(\sqrt{2})}{4} \right) \\ \hline \end{array}$$