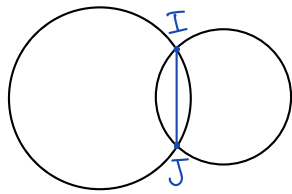


Ex 2.1.8



On commence par chercher les points d'intersection des deux cercles :

$$\begin{cases} x^2 + y^2 - 10x - 10y = 0 \\ x^2 + y^2 + 6x + 2y - 40 = 0 \end{cases}$$

$$-16x - 12y + 40 = 0 \quad | \div (-4)$$

$$\Leftrightarrow 4x + 3y - 10 = 0$$

$$\Leftrightarrow y = -\frac{4}{3}x + \frac{10}{3}$$

substit.

$$\Rightarrow x^2 + \left(-\frac{4}{3}x + \frac{10}{3}\right)^2 - 10x - 10\left(-\frac{4}{3}x + \frac{10}{3}\right) = 0$$

$$\Leftrightarrow x^2 + \frac{16}{9}x^2 - \frac{80}{9}x + \frac{100}{9} - 10x + \frac{40}{3}x - \frac{100}{3} = 0 \quad | \cdot 9$$

$$\Leftrightarrow 9x^2 + 16x^2 - 80x + 100 - 90x + 120x - 300 = 0$$

$$\Leftrightarrow 25x^2 - 50x - 200 = 0 \quad | \div 25$$

$$\Leftrightarrow x^2 - 2x - 8 = 0$$

$$\Leftrightarrow (x-4)(x+2) = 0$$

$$\Leftrightarrow x_{1,2} = \begin{cases} 4 & \Rightarrow y = -\frac{4}{3} \cdot 4 + \frac{10}{3} = -2 & \Rightarrow I(4; -2) \\ -2 & \Rightarrow y = -\frac{4}{3} \cdot (-2) + \frac{10}{3} = 6 & \Rightarrow J(-2; 6) \end{cases}$$

$$\Rightarrow \vec{IJ} = \begin{pmatrix} -2 \\ 6 \end{pmatrix} - \begin{pmatrix} 4 \\ -2 \end{pmatrix} = \begin{pmatrix} -6 \\ 8 \end{pmatrix} \Rightarrow \|\vec{IJ}\| = \sqrt{36 + 64} = \underline{\underline{10 \text{ u}}}$$