

Exo 2 :

$$A(2,1), B(1,1), C(1,2)$$

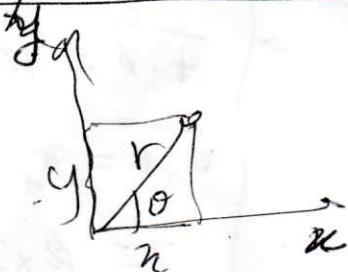
1) les coordonnées polaires (r, θ) :

$$x = r \cos \theta$$

$$y = r \sin \theta$$

$$r = \sqrt{x^2 + y^2}$$

$$\tan \theta = \frac{y}{x}$$



$$\star \underline{A(2,1)} : r = \sqrt{4+1} = \sqrt{5}$$
$$\tan \theta = \frac{1}{2} \Rightarrow \theta = \text{Arctg}\left(\frac{1}{2}\right) = 26,56^\circ$$

$$A(r, \theta) \rightarrow A(\sqrt{5}, 26,56^\circ)$$

$$\star \underline{B(1,1)} : r = \sqrt{2} \quad \left. \begin{array}{l} \tan \theta = \frac{1}{1} = 1 \\ \end{array} \right\} B(\sqrt{2}, 45^\circ)$$

$$\star \underline{C(1,2)} : r = \sqrt{1+4} = \sqrt{5}$$
$$\tan \theta = 2 \Rightarrow \theta = 63,43^\circ$$
$$C(\sqrt{5}; 63,43^\circ)$$

2) Exprimer les vecteurs $\vec{AB}, \vec{AC}, \vec{BC}$:

En coordonnées cartésiennes

$$\vec{AB} : \begin{pmatrix} 1-2 \\ 1-1 \end{pmatrix} = \begin{pmatrix} -1 \\ 0 \end{pmatrix} \Rightarrow \vec{AB} = -\vec{i}$$

$$\vec{AC} : \begin{pmatrix} 1-2 \\ 2-1 \end{pmatrix} = \begin{pmatrix} -1 \\ 1 \end{pmatrix} \Rightarrow \vec{AC} = -\vec{i} + \vec{j}$$

$$\vec{BC} : \begin{pmatrix} 1-1 \\ 2-1 \end{pmatrix} = \begin{pmatrix} 0 \\ 1 \end{pmatrix} \Rightarrow \vec{BC} = \vec{j}$$

En coordonnées polaires :

$$\vec{AB} : \begin{cases} r = \sqrt{x^2 + y^2} = 1 \\ \tan \theta = \frac{y}{x} = 0 \end{cases} \Rightarrow \begin{cases} r = 1 \\ \theta = 0^\circ \end{cases}$$

$$\vec{AC} : \begin{cases} r = \sqrt{2} \\ \tan \theta = -1 \end{cases} \Rightarrow \begin{cases} r = \sqrt{2} \\ \theta = 135^\circ \end{cases}$$

$$\vec{BC} : \begin{cases} r = 1 \\ \tan \theta = \frac{1}{0} \end{cases} \Rightarrow \theta = 90^\circ$$