

Exercice d'application

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$$2. A(2; -1; 3) \quad ; \quad B(1; 0; -1) \quad \text{et} \quad C(0; -1; 2)$$

$$\vec{AB} \begin{pmatrix} 1-2 \\ 0-(-1) \\ -1-3 \end{pmatrix} \quad \vec{AB} \begin{pmatrix} -1 \\ +1 \\ -4 \end{pmatrix}$$

$$\vec{AC} \begin{pmatrix} 0-2 \\ -1-(-1) \\ 2-3 \end{pmatrix} \quad \vec{AC} \begin{pmatrix} -2 \\ 0 \\ -1 \end{pmatrix} \quad \vec{AB} \cdot \vec{AC} = 2 + 0 + 4 = 6$$

$$AB = \sqrt{(1-2)^2 + (0-(-1))^2 + (-1-3)^2}$$

$$AB = \sqrt{(-1)^2 + 1^2 + (-4)^2}$$

$$AB = \sqrt{2+16} \quad AB = \sqrt{18}$$

$$AC = \sqrt{(-2)^2 + 0^2 + (-1)^2}$$

$$AC = \sqrt{5}$$

$$\begin{aligned} \vec{AB} \cdot \vec{AC} &= \sqrt{18} \times \sqrt{5} \cos \theta \\ &= \sqrt{90} \cos \theta \\ &= \sqrt{9} \sqrt{10} \cos \theta \\ &= 3 \sqrt{10} \cos \theta \end{aligned}$$

$$\text{Donc} \quad 3 \sqrt{10} \cos \theta = 6$$

$$\cos \theta = \frac{2}{\sqrt{10}}$$

$$\cos \theta = \frac{2\sqrt{10}}{10}$$

Ainsi $\boxed{\cos \theta = \frac{\sqrt{10}}{5}}$

2, $\theta \approx 50,8^\circ$