Vecteurs

Norme ✓ (longueur)

$\vec{u} = \begin{pmatrix} u_1 \\ u_2 \end{pmatrix}$ $\quad \|\vec{u}\| = \sqrt{u_1^2 + u_2^2}$

$\|\vec{u}\| = \sqrt{\vec{u} \cdot \vec{u}}$

Produit scalaire

$\begin{pmatrix} 1 \\ 2 \end{pmatrix} \cdot \begin{pmatrix} 3 \\ 4 \end{pmatrix} = \underbrace{1 \cdot 3 + 2 \cdot 4}_{\text{nombre}} = \boxed{11} > 0$ AIGU

(multiplication, multiplication, nombre)

vecteur · vecteur

opération

But : calculer les angles

$\cos\alpha = \dfrac{\vec{a} \cdot \vec{b}}{\|\vec{a}\| \cdot \|\vec{b}\|}$

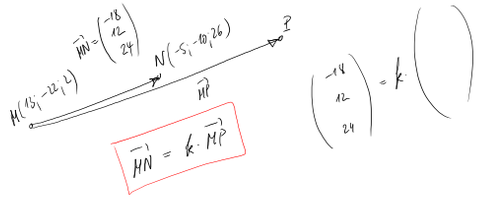
$\begin{pmatrix} 1 \\ -2 \end{pmatrix} \cdot \begin{pmatrix} 1 \\ 1 \end{pmatrix} = 1 \cdot 1 + (-2) \cdot 1 = -1 < 0$ OBTUS

$\cos\alpha = \dfrac{-1}{\sqrt{1^2+2^2} \cdot \sqrt{1^2+1^2}} = \dfrac{-1}{\sqrt{5} \cdot \sqrt{2}}$

$\begin{pmatrix} 1 \\ 2 \end{pmatrix} \cdot \begin{pmatrix} -2 \\ 1 \end{pmatrix} = 1 \cdot (-2) + 2 \cdot 1 = 0$ DROIT

$\dfrac{5ab}{a^2b^2} = \dfrac{5 \not{a} \not{b}}{\not{a} a \not{b} b} = \dfrac{5}{ab}$

$\dfrac{18x^2y^5}{3xy} = \dfrac{18}{3} \cdot \dfrac{x^2}{x} \cdot \dfrac{y^5}{y} = 6 \cdot x \cdot y^4 = 6xy^4$



13.4

c) $\begin{vmatrix} 2 & 0 & 6 \\ -1 & 2 & -11 \\ 5 & 3 & 4 \end{vmatrix} = 2 \begin{vmatrix} 2 & -11 \\ 3 & 4 \end{vmatrix} + \begin{vmatrix} 0 & 6 \\ 3 & 4 \end{vmatrix} + 5 \begin{vmatrix} 0 & 6 \\ 2 & -11 \end{vmatrix}$

$= 2\left(8 + 33\right) - 18 + 5(-12)$

$= 82 - 18 - 60 = 4$

d) $\begin{vmatrix} 1 & 1/2 & 5 \\ 2/3 & -3/4 & -2 \\ -1/3 & 1 & 1/2 \end{vmatrix} = 1 \begin{vmatrix} -3/4 & -2 \\ 1 & 1/2 \end{vmatrix} - 2/3 \begin{vmatrix} 1/2 & 5 \\ 1 & 1/2 \end{vmatrix} - 1/3 \begin{vmatrix} 1/2 & 5 \\ -3/4 & -2 \end{vmatrix}$

$= -\frac{3}{8} + 2 - \frac{2}{3}\left(\frac{1}{4} - 5\right) - \frac{1}{3}\left(-1 + \frac{15}{4}\right)$

$= -\frac{3}{8} + 2 - \frac{2}{12} + \frac{10}{3} + \frac{1}{3} - \frac{5}{4}$

$= \dfrac{-9 + 48 - 4 + 80 + 8 - 30}{24} = \dfrac{93}{24}$