Geometria Analítica e Álgebra Linear - Vetores Cheat Sheet

by Zulle via cheatography.com/126577/cs/24557/

Componentes do Vetor

A = (x_a,y_a)	B = (x_b,y_b)

~~AB~~ = B - A

Norma

"módulo da distância entre os pontos do vetor"

||~~w~~|| = ($(x_2-x_1)^2+(y_2-y_1)^2+(z_2-z_1)^2$)$^{1/2}$

Operações

soma	~~V+W~~ = (vx+wx, vy+wy, vz+wz)
obs.:	(~~V+W~~) + ~~U~~ = ~~V~~ + (~~W~~ + ~~U~~)
diferença	~~V+W~~ = (vx-wx, vy-wy, vz-wz)
obs.:	(~~V~~ - ~~W~~) = ~~V~~ + (-~~W~~)

Vetores

simétrico	~~V~~ + (-~~V~~) = 0
unitário	~~U~~ = (~~V~~ / ||~~V~~||)
obs.:	||~~U~~|| = 1

Multiplicação por Escalar

~~V~~ = a~~W~~ -> são vetores colineares

a(b~~V~~) = ab(~~V~~)

a(~~V~~ + ~~W~~) = a~~V~~ +a~~W~~

(a+b) ~~V~~ = a~~V~~ + b~~V~~

Produto Escalar

~~V~~ . ~~W~~ = 0	se ~~V~~ ou ~~W~~ = 0

~~V~~ . ~~W~~ = || ~~V~~ ||.|| ~~W~~ ||.cos(t)

t^o = arccos (~~V~~ . ~~W~~)	achar o ângulo

. . . . || ~~V~~ ||.|| ~~W~~ ||

1. achar derivada de g(x)

~~V~~ . ~~W~~ = ~~W~~ . ~~V~~

~~U~~ (~~V~~ + ~~W~~) = ~~U~~. ~~V~~ + ~~U~~. ~~W~~

Produto Vetorial

|| ~~V~~ x ~~W~~ || = ||~~V~~|| . ||~~W~~|| . sen(t)

~~V~~ x ~~W~~ = det (~~i~~ , ~~j~~ , ~~k~~)

~~V~~ x ~~W~~ = -(~~W~~ x ~~V~~)

|| ~~V~~ x ~~W~~ || = ($i^2+j^2+k^2$)$^{1/2}$ <- área vetorial

Produto Misto

(~~V~~ x ~~W~~) . ~~U~~ = det (Ux Uy Uz)

_ _ _ _ _ _ _ _ _ _ (Vx Vy Vz)

_ _ _ _ _ _ _ _ _ _ _(Wx Wy Wz)

obs.: o modulo do produto misto é igual ao **volume** do paralelepípedo formado por tais vetores.

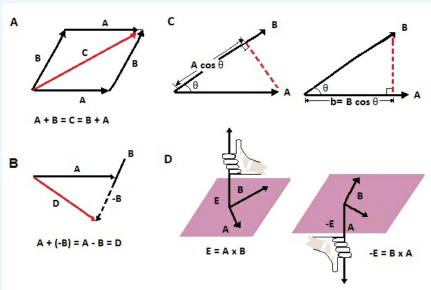
Projeção Ortogonal

"parte de ~~V~~ que está sobre ~~W~~" -> ~~Vx~~ = a~~W~~

proj ~~w~~ ~~V~~ = ~~V~~ . ~~W~~ . ~~W~~

_ _ _ _ _ _ || ~~W~~^{2} ||

NOTAS



NOTAS

~~V~~ x ~~W~~ = 0	se forem paralelos (~~V~~ = a~~W~~)
~~V~~ . ~~W~~ = 0	se forem perpendiculares
~~U~~ . (~~V~~ x ~~W~~) = 0	se forem coplanares

NOTAS

||V||