$\vec{a} = 4\hat{i} + 3\hat{k} = \langle 4, 0, 3 \rangle$

$\vec{b} = 5\hat{i} + 2\hat{j} + 3\hat{k} = \langle 5, 2, 3 \rangle$

$$\vec{a} \times \vec{b} = \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ 4 & 0 & 3 \\ 5 & 2 & 3 \end{vmatrix} \begin{matrix} \hat{i} & \hat{j} \\ 4 & 0 \\ 5 & 2 \end{matrix}$$

$0\hat{i} + 15\hat{j} + 8\hat{k}$

$= 0\hat{k} - 6\hat{i} - 12\hat{j} +$

$= -6\hat{i} + 3\hat{j} + 8\hat{k}$

$\vec{a}(t) = 4t\hat{i} + 3t\hat{k} = \langle 4t, 0, 3t \rangle$

$\vec{b}(t) = \cos t\,\hat{i} + \tan(t^2)\hat{j} + 4\hat{k}$

$$\vec{a} \times \vec{b} = \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ 4t & 0 & 3t \\ \cos t & \tan t^2 & 4 \end{vmatrix} \begin{matrix} \hat{i} & \hat{j} \\ 4t & 0 \\ \cos t & \tan t^2 \end{matrix}$$

$0\hat{i} - 3t\tan t^2\hat{i} - 16t\hat{j} + 0\hat{i} + 3t\cos t\,\hat{j} + 4t\tan t^2\hat{k}$

$= -3t\tan t^2\hat{i} + (3t\cos t - 16t)\hat{j} + (4t\tan t^2)\hat{k}$

$\vec{a}(t) = 4t\hat{i} + 3t\hat{k} = \langle 4t, 0, 3t \rangle$

$\vec{b}(t) = \cos t\,\hat{i} + \tan(t^2)\hat{j} + 4\hat{k}$

$\vec{a}(t) \cdot \vec{b}(t) = 4t\cos t + 12t$

Função escalar.

$\mathbb{R} \rightarrow \mathbb{R}^5$

$IE(t) = \langle$ inflação(t), dólar(t), PreçoFrango(t), IPCA(t),
rendaMed(t), aluguelMédio(t), IBovespa(t) $\rangle$

$IE(AAAA) = \langle$

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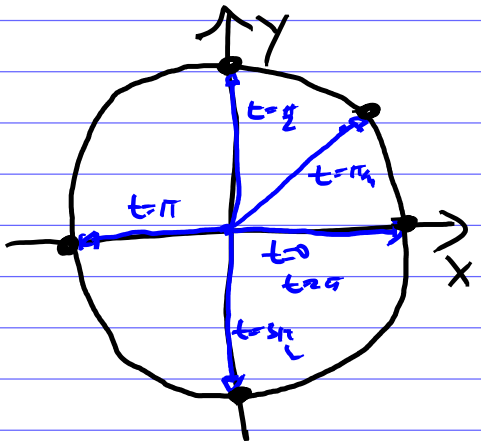
MEGASENA(#jogo) $= \langle$ D1, D2, D3, D4, D5, D6 $\rangle$

$$\vec{r}(t) = \langle \cos t, \operatorname{sen} t, 0 \rangle$$

$$t \in [0, 2\pi]$$

t	$\vec{r}(t)$
0	$\langle 1, 0, 0 \rangle$
$\frac{\pi}{4}$	$\langle \frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}, 0 \rangle$
$\frac{\pi}{2}$	$\langle 0, 1, 0 \rangle$
π	$\langle -1, 0, 0 \rangle$
$\frac{3\pi}{2}$	$\langle 0, -1, 0 \rangle$
2π	$\langle 1, 0, 0 \rangle$

$z = 0$



$$\vec{r}(t) = \langle \cos t, \operatorname{sen} t, t \rangle$$

Plano XY

Um círculo

Plano YZ

$y = \operatorname{sen} t$
$z = t$
$\Rightarrow y = \operatorname{sen} z$

Plano XZ

$x = \cos t$
$z = t$
$\Rightarrow x = \cos z$