Tarefa Básica - Multiplicação de matrizes

01 - $A = \begin{bmatrix} 3 & -1 \\ 0 & 2 \end{bmatrix}_{2\times2}$ $B = \begin{bmatrix} -1 & 2 & 0 \\ 1 & -3 & 4 \end{bmatrix}_{2\times3}$ $A \cdot B \; \exists \to 2 = 2$

$B \cdot A \; \not\exists \to 3 \neq 2$

$A \cdot B = \begin{bmatrix} -3-1 & 6+3 & 0-4 \\ 0+2 & 0-6 & 0+8 \end{bmatrix} = \begin{bmatrix} -4 & 9 & -4 \\ 2 & -6 & 8 \end{bmatrix} \leftarrow AB$

02 - $A = \begin{bmatrix} 5 & 2 & -1 \\ 7 & 4 & 3 \end{bmatrix}_{2\times3}$ $B = \begin{bmatrix} 3 & -2 \\ 1 & -3 \\ -4 & 0 \end{bmatrix}_{3\times2}$ $A \cdot B \; \exists \to 3 = 3$

$B \cdot A \; \exists \to 2 = 2$

$AB = \begin{bmatrix} 15+2+4 & -10-6+0 \\ 21+4-12 & -14-12+0 \end{bmatrix}$ $BA = \begin{bmatrix} 15-14 & 6-8 & -3-6 \\ 5-21 & 2-12 & -1-9 \\ -20+0 & -8+0 & 4+0 \end{bmatrix}$ $BA = \begin{bmatrix} 1 & -2 & -9 \\ -16 & -10 & -10 \\ -20 & -8 & 4 \end{bmatrix}$

$AB = \begin{bmatrix} 21 & -16 \\ 13 & -26 \end{bmatrix}$

03- $A = \begin{bmatrix} -1 & 0 \\ 1 & 2 \end{bmatrix}_{2\times2}$ $A^2 = \begin{bmatrix} -1 & 1 \\ 0 & 2 \end{bmatrix}_{2\times2}$ $A \cdot A^2 = \begin{bmatrix} 1+0 & -1+00 \\ -1+0 & 1+4 \end{bmatrix}$ $A \cdot A^2 = \begin{bmatrix} 1 & -1 \\ -1 & 5 \end{bmatrix}$

04- $A = \begin{bmatrix} 1 & 2 & 5 \\ 3 & 4 & 6 \end{bmatrix}$ $B = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$ $C = A \cdot B$

$c_{21} = \begin{bmatrix} 3 & 4 & 6 \end{bmatrix} \cdot \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix} = \begin{bmatrix} 3+8+18 \end{bmatrix}$

$$c_{21} = \begin{bmatrix} 29 \end{bmatrix}$$

05-a)

$$\overset{A}{\begin{array}{l} 1 \to \\ 2 \to \end{array}\begin{bmatrix} 25 & 50 & 200 & 20 \\ 28 & 60 & 150 & 22 \end{bmatrix}_{2\times4}} \qquad \overset{B}{\begin{bmatrix} 1,00 & 1,00 \\ 8,00 & 10,00 \\ 0,90 & 0,80 \\ 1,50 & 1,00 \end{bmatrix}_{4\times2}}$$

b) $A \cdot B = \begin{bmatrix} 25+400+180+30 & 25+500+160+20 \\ 28+480+135+33 & 28+600+120+22 \end{bmatrix}$

$AB = \begin{bmatrix} 635 & 705 \\ 676 & 770 \end{bmatrix} \begin{array}{l} \to Rot.1 \\ \to Rot.2 \end{array}$

$\uparrow Lucro = (A_1B_2 - A_1B_1)+(A_2B_2 - A_2B_1)$

$\uparrow Lucro = (705-635)+(770-676)$

$\uparrow Lucro = 70 + 94$

$\uparrow Lucro = R\$ 164,00$

06- $\overset{A}{\begin{bmatrix} 0 & -1 \\ \alpha & 1 \end{bmatrix}} \cdot \overset{B}{\begin{bmatrix} \alpha & 1 \\ -1 & 0 \end{bmatrix}} = \overset{C}{\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}}$ $\begin{cases} (A_{21} \cdot B_{12})+(A_{22} \cdot B_{22})=a_{22} \\ (\alpha \cdot 1)+(1 \cdot 0)=1 \\ \alpha + 0 = 1 \\ \alpha = 1 \end{cases}$

Tarefa Básica - Entichecidada sobre produto Matricial

01- (A)

$(A^t)^t = A$ $B = \begin{bmatrix} 0 \\ 1 \end{bmatrix}$ $\overset{A}{} \quad A^t = \begin{bmatrix} 0 & 1 \end{bmatrix}$ $(A^t)^t = \begin{bmatrix} 0 \\ 1 \end{bmatrix}$

$(B^t)^t = B$

02- (D) $(AB)C = A.(BC)$

03-
$\begin{bmatrix} 5 & 8 & 10 \\ 9 & 6 & 4 \end{bmatrix}$ · $\begin{bmatrix} x \\ y \\ z \end{bmatrix}$

	A	B	C
Dengue-ex	5	8	10
Chicungunhas-ex	9	6	4

2×3 3×1

$a = 5x + 8y + 10z$ $\begin{bmatrix} a \\ b \end{bmatrix}$ (B)
$b = 9x + 6y + 4z$

04- A. $\begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix} = \begin{bmatrix} -1 \\ 4 \\ 2 \end{bmatrix}$ → $\begin{bmatrix} a & b & c \\ d & 0 & f \\ g & h & i \end{bmatrix}$ · $\begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix} = \begin{bmatrix} -1 \\ 4 \\ 2 \end{bmatrix}$

3×3 3×1

(C)

$(a.1) + (b.0) + (c.0) = -1$ $\begin{bmatrix} -1 & \cdots & \cdots \\ 4 & \cdots & \cdots \\ 2 & \cdots & \cdots \end{bmatrix}$
$a = -1$
$(d.1) + (e.0) + (f.0) = 4$
$d = 4$
$(g.1) + (h.0) + (i.0) = 2$ $\begin{bmatrix} -1 & 4 & 2 \\ \cdots & \cdots & \cdots \\ \cdots & \cdots & \cdots \end{bmatrix}$
$g = 2$