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TAREFA BÁSICA – DETERMINANTES – MATRIZ DE ORDEM 1,2 e 3

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Paola Martins

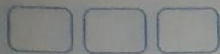
Lista 3 - Tarefa Básica - Determinantes

a) $\begin{bmatrix} 2 & 3 \\ 1 & 5 \end{bmatrix}$ principal $\rightarrow 2 \cdot 5 = 10$ } $\det = 10 - 3 = 7$
secundária $\rightarrow 1 \cdot 3 = 3$

b) $\begin{bmatrix} 2 & 4 \\ 3 & 6 \end{bmatrix}$ $-2 \cdot 6 = -12$ } $\det = -12 - (-12) = 0$
 $-4 \cdot 3 = -12$

c) $\begin{bmatrix} 3 & -1 & 1 \\ 2 & 1 & -1 \\ 1 & 4 & -2 \end{bmatrix}$ $3 \cdot 1 \cdot -2 = -6$ } $-6 + 1 + 8 = 3$
 $-1 \cdot (-1) \cdot 1 = 1$
 $1 \cdot 2 \cdot 4 = 8$
 $1 \cdot 1 \cdot 1 = 1$ } $1 + (-12) + 4 = -7$ } $\det = 3 - (-7) = 10$
 $4 \cdot (-1) \cdot 3 = -12$
 $-2 \cdot 1 \cdot (-1) = 2$

d) $\begin{bmatrix} 3 & 2 & 1 \\ 2 & 3 & 1 \\ 1 & 1 & 4 \end{bmatrix}$ $3 \cdot 3 \cdot 4 = 36$ } $36 + 2 - 2 = 36$
 $2 \cdot 1 \cdot 1 = 2$
 $-1 \cdot 2 \cdot 1 = -2$
 $1 \cdot 3 \cdot -1 = -3$ } $-3 + 3 + 16 = 16$ } $\det = 36 - 16 = 20$
 $1 \cdot 1 \cdot 3 = 3$
 $4 \cdot 2 \cdot 2 = 16$



• principal
• secundária

DOM	SEG	TER	QUA	QUI	SEX	SÁB
DOM	LUN	MAR	MIE	JUE	VIE	SÁB
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② $a_{11} = -3$ $A = \begin{bmatrix} -3 & 0 & 0 \\ 0 & -3 & 0 \\ 0 & 0 & -3 \end{bmatrix}$ $-3 \cdot 0 \cdot 0 = 0$ $-3 \cdot (-3) \cdot -3 = -27$
 $a_{12} = 0$ $0 \cdot -3 \cdot 0 = 0$ $0 \cdot 0 \cdot 0 = 0$
 $a_{13} = 0$ $0 \cdot 0 \cdot -3 = 0$ $0 \cdot 0 \cdot 0 = 0$
 $a_{21} = 0$ $0 \cdot -3 \cdot 0 = 0$
 $a_{22} = -3$ $0 \cdot 0 \cdot -3 = 0$
 $a_{23} = 0$ $-3 \cdot 0 \cdot 0 = 0$
 $a_{31} = 0$
 $a_{32} = 0$
 $a_{33} = -3$

$\det A = -27$

③ $\begin{bmatrix} x & 1 & x \\ 3 & x & 4 \\ 1 & 3 & 8 \end{bmatrix} \cdot -3$ $x \cdot x \cdot 3 = 3x^2$ $3 \cdot 1 \cdot 3 = 9$
 $3 \cdot 3 \cdot x = 9x$ $x \cdot 3 \cdot 4 = 12$
 $1 \cdot 1 \cdot 4 = 4$ $1 \cdot x \cdot x = x^2$
 $3x^2 + 9x + 4 - (x^2 + 12x + 9)$
 $2x^2 - 3x - 5 = -3$
 $2x^2 - 3x - 5 + 3 = 0$
 $2x^2 - 3x - 2 = 0$

$\Delta = (-3)^2 - 4 \cdot 2 \cdot (-2)$ $x = \frac{-(-3) \pm \sqrt{25}}{2 \cdot 2}$
 $\Delta = 9 + 16$
 $\Delta = 25$ $x = \frac{3 \pm 5}{4}$

$x' = \frac{3+5}{4} = \frac{8}{4} = 2$

$(E) \{-1/2; 2\}$

$x'' = \frac{3-5}{4} = \frac{-2}{4} = -1/2$

$$\textcircled{5} A = \begin{bmatrix} 2 & 1 & 3 \\ 2 & 2 & 3 \\ 2 & 3 & 3 \end{bmatrix}$$

$$a_{11} = 2 \cdot 1 - 3 \cdot 1 = -1$$

$$a_{12} = 2 \cdot 1 - 3 \cdot 2 = -4$$

$$a_{21} = 2 \cdot 2 - 3 \cdot 1 = 1$$

$$a_{22} = 2 \cdot 2 - 3 \cdot 2 = -2$$

$$a_{31} = 2 \cdot 3 - 3 \cdot 1 = 3$$

$$a_{32} = 2 \cdot 3 - 3 \cdot 2 = 0$$

$$B = 2 \times 3 \rightarrow K \cdot i$$

$$b_{11} = 1 - 1 = 0$$

$$b_{12} = 2 - 1 = 1$$

$$b_{13} = 3 - 1 = 2$$

$$b_{21} = 1 - 2 = -1$$

$$b_{22} = 2 - 2 = 0$$

$$b_{23} = 3 - 2 = 1$$

$$A = \begin{bmatrix} -1 & -4 \\ 1 & -2 \\ 3 & 0 \end{bmatrix}$$

$$B = \begin{bmatrix} 0 & 1 & 2 \\ -1 & 0 & 1 \end{bmatrix}$$

$$AB = \begin{bmatrix} 0+4 & -1+0 & -2+4 \\ 0+2 & 1+0 & 2-2 \\ 0+0 & 3+0 & 6+0 \end{bmatrix}$$

$$AB = \begin{bmatrix} 4 & -1 & -6 \\ 2 & 1 & 0 \\ 0 & 3 & 6 \end{bmatrix} \left\{ \begin{array}{l} 4 \cdot 1 \cdot 6 = 24 \\ 2 \cdot 3 \cdot (-6) = -36 \\ 0 \cdot (-1) \cdot 0 = 0 \end{array} \right\} \begin{array}{l} 24 - 36 = -12 \\ 4 \cdot (-1) \cdot 6 = -24 \\ 2 \cdot 1 \cdot 0 = 0 \\ 0 \cdot 3 \cdot 6 = 0 \end{array} \left\{ \begin{array}{l} -12 \\ -24 \\ 0 \end{array} \right\}$$

$$\det AB = -12 - (-24) = 12$$

⑥

$$B = \begin{bmatrix} 1 & -1 \\ -1 & 1 \\ 0 & 2 \end{bmatrix}$$

$$A = \begin{bmatrix} 2 & 0 & -1 \\ -1 & 1 & 0 \end{bmatrix}$$

$$AB = \begin{bmatrix} 2+0+0 & -2+0-2 \\ (-1)-1+0 & 1+1+0 \end{bmatrix}$$

$$\det AB = -4$$

$$AB = \begin{bmatrix} 2 & -4 \\ -2 & 2 \end{bmatrix} \left\{ \begin{array}{l} 2 \cdot 2 = 4 \\ -2 \cdot (-4) = 8 \end{array} \right\}$$

$$\det AB = 4 - 8 = -4$$