Tarefa básica - Propriedades dos Determinantes

01. $\begin{pmatrix} p & 2 & 2 \\ p & 4 & 4 \\ p & 4 & 1 \end{pmatrix} = -18$

R: E //

→ proporcional

$\begin{pmatrix} p & -1 & 2 \\ p & -2 & 4 \\ p & -2 & 1 \end{pmatrix} = \cdot(-2) \begin{vmatrix} p & 2 & 2 \\ p & 4 & 4 \\ p & 4 & 1 \end{vmatrix} = -18 \div 2 = 9$

02. $A_{4\times4} \rightarrow \det A = -6$

$\det(2A) = x - 97$

$2^4 \cdot (\det A) = x - 97$ R: C //

$16 \cdot (-6) = x - 97$

$-96 = x - 97$

$x = 97 - 96$

$\boxed{x = 1}$

03. Exemplo

$\frac{1}{2} \cdot 4$ 2ª multiplicação

$A = \begin{vmatrix} 1 & 1 & 2 \\ 1 & 0 & 0 \\ 1 & 1 & 2 \end{vmatrix} \rightarrow \begin{vmatrix} 4 & 1 & 2 \\ 4 & 0 & 0 \\ \frac{x}{4} & \frac{1}{x} & \frac{2}{x} \end{vmatrix}$ R: C //

$\div x$ 1ª divisão

→ em comum

04 $\begin{pmatrix} 2 & 1 & 0 \\ k & k & k \\ 1 & 2 & -2 \end{pmatrix} = 10$

$\begin{vmatrix} 2 & 1 & 0 \\ k & k & k \\ 1 & 2 & -2 \end{vmatrix} \begin{matrix} 2 & 1 \\ k & k \\ 1 & 2 \end{matrix}$ $= 10$

$0 \quad 4k \quad -2k = 2k$

$-4k + k \quad 0 = -3k$

$\begin{pmatrix} 2 & 1 & 0 \\ k+4 & k+3 & k-1 \\ 1 & 2 & -2 \end{pmatrix} = \begin{vmatrix} 2 & 1 & 0 \\ (-2)+4 & (-2)+3 & (-2)-1 \\ 1 & 2 & -2 \end{vmatrix}$

$-3k - (2k) = 10$

$-3k - 2k = 10$

$-5k = 10$

$k = \frac{10}{-5}$

$k = -2$

$\downarrow$

$\begin{vmatrix} 2 & 1 & 0 \\ 2 & 1 & -3 \\ 1 & 2 & -2 \end{vmatrix} \begin{matrix} 2 & 1 \\ 2 & 1 \\ 1 & 2 \end{matrix}$

$0 \quad -12 \quad -4 = -16$

$-4 \quad -3 \quad 0 = -7$

$= -7 - (-16) = 9$

R: C

05 $\begin{pmatrix} 1 & -11 & 6 \\ -2 & 4 & -3 \\ -3 & -7 & 2 \end{pmatrix} \cdot 2 \Rightarrow \begin{pmatrix} 1 & -11 & 12 \\ -2 & 4 & -6 \\ -3 & -7 & 4 \end{pmatrix}$

linear paralelas

$+$

R: D

Coluna 1 = 2 coluna 3 + coluna 2

$1 = 2 \cdot 6 + (-11) = 1$

$-2 = 2(-3) + 4 = -2$

$-3 = 2 \cdot 2 + (-7) = -3$

S T Q Q S S D

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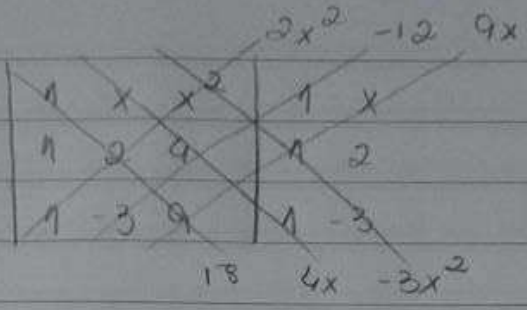
06. $\begin{vmatrix} 1 & x & x^2 \\ 1 & 2 & 4 \\ 1 & -3 & 9 \end{vmatrix} = 0$



$18 + 4x - 3x^2 - 2x^2 + 12 - 9x$

$-5x^2 - 5x + 30$

$a = -5 \quad \Delta = 25 + 600$

$b = 5 \quad \Delta = 625$

$c = 30$

$$x = \frac{5 \pm 25}{-10}$$

$x_1 = -3 \quad S = \{-3, 2\}$ //

$x_2 = 2$

07. $\begin{vmatrix} 1 & 0 & 0 & 0 & 0 \\ 2 & 2 & 0 & 0 & 0 \\ 3 & 2 & 1 & 0 & 0 \\ 4 & 2 & 3 & -2 & 0 \\ 5 & 1 & 2 & 3 & 3 \end{vmatrix} = 1 \cdot 2 \cdot 1 \cdot (-2) \cdot 3 = -12$ R: D //