

Tarefa Básica - Determinantes - Cálculo Geral

01. $A = \begin{vmatrix} 1 & a & 0 & 1 & a \\ 0 & 1 & 1 & 0 & 1 \\ 0 & -1 & 1 & 0 & -1 \end{vmatrix}$

1 - (-1) = 2 //

$B = \begin{vmatrix} 1 & 0 & 0 & 3 \\ a & 1 & -1 & 4 \\ 0 & 0 & 0 & 3 \\ 0 & 1 & 1 & 4 \end{vmatrix}$

0. cof(a₁₂) 1. cof(a₂₂) 0 3 0 = 3 0. cof(a₃₂) 1. cof(a₄₂) 3 0

1. 0 0 3 0 0 = 3 1. 0 0 3 0 0 = 3

0 1 4 0 1 0 1 4 0 1

0 0 0 0 0 0

1. cof(a₂₂) = 3

1. cof(a₄₂) = 3

3 + 3 = 6 //

Det A = 2, Det B = 6.

02. $\begin{vmatrix} x^2 & 0 & x & -\frac{1}{10} \\ 7,5 & 0 & 5 & 2 \\ 10 & 0 & 4 & 2 \\ 1 & 1 & 1 & 1 \end{vmatrix} = 0$ $x = ?$

1. cof(a₄₂) -5 8x² 15x

1. $\begin{vmatrix} x^2 & x & -\frac{1}{10} & x^2 & x \\ 7,5 & 5 & 2 & 7,5 & 5 \\ 10 & 4 & 2 & 10 & 4 \end{vmatrix}$

10x² 20x - 3

$2x^2 + 5x + 2$ $x = \frac{-5 \pm 3}{4}$

a = 2 $\Delta = 25 - 16$

b = 5 $\Delta = 9$

c = 2

$x_1 = -\frac{1}{5}$

$x_2 = -2$

$10x^2 + 20x - 3 - (8x^2 + 15x - 5)$

$10x^2 + 20x - 3 - 8x^2 - 15x + 5$

$2x^2 + 5x + 2$

$x = -2; x = -\frac{1}{2}$ //

$$Q3. \begin{vmatrix} x & 0 & 0 & 3 \\ -1 & x & 0 & 0 \\ 0 & -1 & x & 1 \\ 0 & 0 & -1 & -2 \end{vmatrix}$$

$$\begin{array}{l} x \cdot \text{cof}(a_{22}) = 0 - x \cdot 0 \\ \begin{array}{cc|cc} x & 0 & 3 & x & 0 \\ 0 & x & 1 & 0 & x \\ 0 & -1 & -2 & 0 & -1 \end{array} \\ -2x^2 - (-x) \\ -2x^2 + x \cdot (x) \\ -2x^2 + x^2 \end{array}$$

$$\begin{array}{l} \xrightarrow{\text{5 impar}} \\ -1 \cdot \text{cof}(a_{32}) = 0 \cdot 0 \cdot 0 \\ \begin{array}{cc|cc} x & 0 & 3 & x & 0 \\ -1 & 0 & 0 & -1 & 0 \\ 0 & -1 & -2 & 0 & -1 \end{array} \\ 0 \cdot 0 \cdot 3 \\ 3 \cdot (-1) = -3 \rightarrow 3 \end{array}$$

$$\begin{aligned} x \cdot \text{cof}(a_{22}) &= -2x^3 + x^2 \\ (-1) \cdot \text{cof}(a_{32}) &= 3 \\ &= -2x^3 + x^2 + 3 \end{aligned}$$

R: A //

$$Q4. \begin{vmatrix} x & 1 & 0 & 0 & 0 \\ 0 & x & 1 & 0 & 0 \\ 0 & 0 & x & 1 & 0 \\ 0 & 0 & 0 & x & k \\ 0 & 0 & 0 & 1 & x \end{vmatrix}$$

$$f(x) = \det A \quad f(-2) = 8$$

$$\begin{aligned} x^5 - kx^3 &= 8 \\ (-2)^5 - k(-2)^3 &= 8 \\ -32 - k(-8) &= 8 \\ -32 + 8k &= 8 \end{aligned}$$

$$\begin{array}{l} x \cdot \text{cof}(a_{11}) \\ \begin{array}{cc|ccc} x & 1 & 0 & 0 & 0 \\ 0 & x & 1 & 0 & 0 \\ 0 & 0 & x & 1 & 0 \\ 0 & 0 & 0 & x & k \\ 0 & 0 & 0 & 1 & x \end{array} \end{array}$$

$$8k = 8 + 32$$

$$8k = 40$$

$$k = \frac{40}{8}$$

R: D //

$$k = 5,$$

$$\begin{array}{l} \begin{array}{cc|ccc} x & 1 & 0 & x & 1 \\ 0 & x & k & 0 & x \\ 0 & 1 & x & 0 & 1 \end{array} \\ \begin{array}{cc|ccc} x & 1 & 0 & x & 1 \\ 0 & x & k & 0 & x \\ 0 & 1 & x & 0 & 1 \end{array} \\ x^3 - kx \cdot (x) \\ x^4 - kx^2 \cdot (x) \\ x^5 - kx^3 \end{array}$$