

Tarefa básica

01- calcule os determinantes:

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

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

$$A = 1 \cdot \det(a_{11}) \quad 0 \quad 0$$

$$0 \cdot 1 + 0 = -1$$

$$\begin{vmatrix} 1 & a & 0 & 1 & a \\ 0 & 1 & 1 & 0 & 1 \\ 0 & -1 & 1 & 0 & -1 \end{vmatrix}$$

$$\det A = 1 - (-1) = 2$$

$$1 + 0 + 0 = 1$$

$$B = 1 \cdot \det(a_{22})$$

$$0 + 3 + 0 = 3$$

$$1. \begin{vmatrix} 1 & 0 & 3 & 1 & 0 \\ 0 & 0 & 3 & 0 & 0 \\ 0 & 1 & 4 & 0 & 1 \end{vmatrix}$$

$$0 - 3 = -3 \rightarrow 1 \cdot -3 = -3$$

$$0 + 0 + 0 = 0$$

1. coef (a42)

$$0+0+0=0$$

$$\begin{array}{ccc|cc} 1 & 0 & 3 & 1 & 0 \\ 1. & a & -1 & 4 & a & -1 \\ 0 & 0 & 3 & 0 & 0 & 0 \end{array}$$

$$-3-0=-3 \rightarrow -3 \cdot 1 = (-3)$$

$$-3+0+0=-3$$

$$1) e + b = (-3) + (-3) = -6$$

2. Calcule x na equação

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

1. coef (a42)

$$-5 + 8x^2 + 15x = 8x^2 + 15x - 5$$

$$\begin{array}{ccc|cc} x^2 & x & -\frac{1}{10} & x^2 & x \\ 1. & 7,5 & 5 & 2 & 7,5 & 5 \\ 10 & 4 & 2 & 10 & 4 \end{array}$$

$$10x^2 + 20x - 3$$

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

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

$$2x^2 + 5x + 2$$

$$2x^2 + 5x + 2 = 0$$

$$\Delta = 5^2 - 4 \cdot 2 \cdot 2$$

$$\Delta = 25 - 16$$

$$\Delta = 9 = \sqrt{9} = 3$$

$$\frac{-5 \pm 3}{4} = \frac{-2}{4} = \frac{-1}{2}$$

$$x' = \frac{-8}{4} = -2$$

$$x = -1/2 \text{ ou } x = -2$$

3.

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

$$x \cdot \text{cof}(a_{11}) =$$

$$0 \cdot x \cdot 0 = -x$$

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

$$-2x^2 + 0 + 0 = -2x^2$$

$$-1 \cdot \text{cof}(a_{21})$$

$$0 + 0 + 0 = 0$$

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

$$0 + 0 + 3 = 3$$

$$\det = -2x^3 + x^2 + 3$$

(A)

$$-2x^2 + x^2$$

$$x \cdot (-2x^2 + x)$$

$$-2x^2 - (-x) = -2x^2 + x$$

impair

$$3 - 0 = 3 \rightarrow -3$$

$$\hookrightarrow (-1) \cdot (-3) = 3$$

4-

$$A = \begin{vmatrix} x & 1 & 0 & 0 & 0 \\ 0 & x & 1 & 0 & 0 \\ 0 & 0 & x & 1 & 0 \\ 0 & 0 & 0 & x & k \\ 0 & 0 & 0 & 1 & x \end{vmatrix}$$

$$f(x) = \det A \text{ e } f(-2) = 8$$

 $x \cdot \text{cof}(a_{11})$

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

$$\det = x^4 - x^2 k$$

$$\Rightarrow x \cdot (x^4 - x^2 k)$$

$$x^5 - x^3 k$$

 $x \cdot \text{cof}(a_{11})$

$$0 - k \cdot x + 0 = kx$$

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

$$\det = x^3 - kx$$

$$x^3 + 0 + 0 = x^3$$

$$\Rightarrow x \cdot (x^3 - kx)$$

$$x^4 - x^2 k$$

$$f(x) = \det A \Rightarrow f(x) = x^5 - x^3 k$$

$$f(-2) = -2^5 - (-2)^3 k = 8$$

$$f(-2) = -32 - 8k = 8$$

$$-32 - 8k = 8$$

$$-8k = -32 - 8 \quad (x = -1)$$

$$8k = 32 + 8$$

$$8k = 40$$

$$k = 40/8$$

$$k = 5$$

(D)