Tarefa Básica - Determinantes - Cálculo Geral

01 -

A) $\begin{vmatrix} 1 & a & 0 \\ 0 & 1 & 1 \\ 0 & -1 & 1 \end{vmatrix}$ $\begin{matrix} 1 & a \\ 0 & 1 \\ 0 & -1 \end{matrix}$ → $det = 1 - (-1)$, $det = 2$

$0 - 1 + 0$

$1 + 0 + 0$

B) $\begin{vmatrix} 1 & 0 & 0 & 3 \\ a & 1 & -1 & 4 \\ 0 & 0 & 0 & 3 \\ 0 & 1 & 1 & 4 \end{vmatrix}$ 1. Cof (B_{22}) 1. Cof (B_{42})

1. Cof (B_{22}) $0 + 3 + 0$

$\begin{vmatrix} 1 & 0 & 3 \\ 0 & 0 & 3 \\ 0 & 1 & 4 \end{vmatrix}$ $\begin{matrix} 1 & 0 \\ 0 & 0 \\ 0 & 1 \end{matrix}$ $det = 0 - 3$, $det = -3$

$0 + 0 + 0$

1. Cof (B_{42}) $0 + 0 + 0$

$\begin{vmatrix} 1 & 0 & 3 \\ a & -1 & 4 \\ 0 & 0 & 3 \end{vmatrix}$ $\begin{matrix} 1 & 0 \\ a & -1 \\ 0 & 0 \end{matrix}$ $det = -3 - 0$, $det = -3$

$-3 + 0 + 0$

Det B = $-3 - 3$

Det B = -6

Q2-

x^2	0	x	$-\frac{1}{10}$
7,5	0	5	2
10	0	4	2
1	1	1	1

$= 0$

1. col (+2)

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

x^2	x	-0,1	x^2	x
7,5	5	2	7,5	5
10	4	2	10	4

$= 0$

$10x^2 + 10x + 3$

$det = (10x^2 + 10x + 3) - (8x^2 + 15x - 5) = 0$

$det = 2x^2 - 5x - 2 = 0$

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

$\Delta = 25 - 16$

$\Delta = 9$

$x = \frac{-5 \pm \sqrt{9}}{4}$

$x1 = \boxed{-\frac{1}{2}}$

$x2 = \boxed{-2}$

11

03-

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

3 ↓ ímpar

$0+0+0$

$$\begin{vmatrix} -1 & x & 0 & -1 & x \\ 0 & -1 & x & 0 & -1 \\ 0 & 0 & -1 & 0 & 0 \end{vmatrix} \quad \det = -1,3$$

$-1+0+0$

1 ↓ ímpar

$0+0+0$

$$\begin{vmatrix} x & 0 & 0 & x & 0 \\ -1 & x & 0 & -1 & x \\ 0 & 0 & -1 & 0 & 0 \end{vmatrix} \quad \det = -1x^2 \longrightarrow \boxed{-2x^3+1x^2+3}$$

$-1x^2+0+0$

-2 ↓ Par

$0+0+0$

$$\begin{vmatrix} x & 0 & 0 & x & 0 \\ -1 & x & 0 & -1 & x \\ 0 & -1 & x & 0 & -1 \end{vmatrix} \quad \det = x^3, -2$$

x^3+0+0

04 -

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

$0+1\times k+0$

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

x^3+0+0

$\det = x.(x^3-1\times k)$

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

$\det find = x.(x^4 - x^2 k)$

$\det find = x^5 - x^3 k$

$f(x) = \det A$

$f(-2) = 8$

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

$-32 + 8k = 8$

$8k = 8 + 32$

$8k = 40$

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

$\boxed{k = 5}$