Tarefa Básica

01. (FUVEST) Calcule os determinantes:

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

$0-1+0=-1$

$1+0+0=1$

$$A=\begin{vmatrix}1 & a\\ 0 & 1\end{vmatrix}=1-(-1)=1+1=2$$

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

$3.Cof(a_{34})$ Impar $3+4=7$

$0-1+0=-1$

$1+0+0=1$

$$3.Cof=\begin{vmatrix}1 & 0 & 0\\ a & 1 & -1\\ 0 & 1 & 1\end{vmatrix}\begin{matrix}1 & 0\\ a & 1\\ 0 & 1\end{matrix}=1-(-1)=1+1=2$$

$3.2=-6$

02. (FATEC) Calcule x na equação

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

$15.-1/10=-5+8x^2+15x$

$$Cof.1(a_{42})=\begin{vmatrix}x^2 & x & -\frac{1}{10}\\ 7,5 & 5 & 2\\ 10 & 4 & 2\end{vmatrix}\begin{matrix}x^2 & x\\ 7,5 & 5\\ 10 & 4\end{matrix}$$

$10x^2+10x+(-1/10.15)=3$

Diagonal Principal $(10x^2+10x+3=0)$ - Diagonal Secundária $(8x^2+15x-5=0)$

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

$\Delta = b^2 - 4.a.c$

$\Delta = (-5)^2 - 4.2.(-2)$

$\Delta = 25 - 16$

$\Delta = 9$

$X = \frac{-b \pm \sqrt{\Delta}}{2.a} = X = \frac{-(-5) \pm \sqrt{9}}{2.2}$

$\Rightarrow X = \frac{5 \pm 3}{4}$

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

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

03. (PUCSP) O determinante

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

Cof 3 (a_{14}) ~~Cof 0 (a_{24})~~ Cof 1 (a_{34}) Cof -2 (a_{44})

0 0 0

1+5 = Impar

$$\text{Cof } 3 = \begin{vmatrix} -1 & x & 0 \\ 0 & -1 & x \\ 0 & 0 & -1 \end{vmatrix} \begin{matrix} -1 & x \\ 0 & -1 \\ 0 & 0 \end{matrix} = -1.3 = -3 \Rightarrow \boxed{+3}$$ //

$-1 + 0 + 0$

Cof 1 = $\begin{vmatrix} X & 0 & 0 \\ -1 & X & 0 \\ 0 & -1 & X \end{vmatrix} \begin{matrix} X & 0 \\ -1 & X \\ 0 & -1 \end{matrix}$ a_{34} = Impar

$-X^2+0+0$

$= -X^2 \cdot 1 = -X^2 = \boxed{X^2}$

Cof 2 = $\begin{vmatrix} X & 0 & 0 \\ -1 & X & 0 \\ 0 & -1 & X \end{vmatrix} \begin{matrix} X & 0 \\ -1 & X \\ 0 & -1 \end{matrix}$ a_{44} = Par

X^3+0+0

$= X^3 \cdot (-2) = \boxed{-2x^3}$

R: $-2x^3+x^2+3 \Rightarrow$ Alternativa (B)

04 (UFSCAR) Sejam a matriz A

$$\begin{bmatrix} X & 1 & 0 & 0 & 0 \\ 0 & X & 1 & 0 & 0 \\ 0 & 0 & X & 1 & 0 \\ 0 & 0 & 0 & X & K \\ 0 & 0 & 0 & 1 & X \end{bmatrix}$$

e a função $f: R \to R$ tal que $f(x) =$ det A e $f(-2) = 8$, então K vale

Cof X(a_{11})

$0+1KX+0 = 1KX$

$M_2 = \begin{vmatrix} X & 1 & 0 & 0 \\ 0 & X & 1 & 0 \\ 0 & 0 & X & K \\ 0 & 0 & 1 & X \end{vmatrix} \begin{matrix} X & 1 & 0 \\ 0 & X & K \\ 0 & 1 & X \end{matrix}$ $\boxed{X^3-1KX}$

X_{11}

$X^3+0+0 = X^3$

$X \cdot (X^3-XK)$

$X^4-X^2K \to M_2$

$X(X^4-X^2K)$

X^5-X^3K

FORONI

$F(-2) = -2^5 - 2^3 K = 8$

$F(-2) = 32 + 8K = 8$

$F(-2) = 40K = 8$

$F(-2) = K = \frac{40}{8} = \boxed{K = 5}$ ⇒ Alternativa (D.)