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Turma: CT11 348

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

$\det A = 2$

$$B = \begin{vmatrix} 1 & 0 & 0 & 3 \\ 2 & 1 & -1 & 4 \\ 0 & 0 & 0 & 3 \\ 0 & 1 & 1 & 4 \end{vmatrix} \quad 1 \cdot \text{cof}(a_{22}) (2+2 = \text{par})$$

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

$$1 \cdot \text{cof}(a_{42}) (4+2 = \text{par})$$

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

$1 \cdot \text{cof}(a_{22}) + 1 \cdot \text{cof}(a_{42}) = -3 - 3 = -6$
 $\det B = -6$

$$2) \begin{vmatrix} x^2 & 0 & x & \frac{-1}{10} \\ 7,5 & 0 & 5 & 2 \\ 10 & 0 & 4 & 2 \\ 1 & 1 & 1 & 1 \end{vmatrix} = 0 \quad 1 \cdot \text{cof}(a_{42}) (4+2 = \text{par})$$

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

$$\det = (10x^2 + 20x - 3) - (-5 + 8x^2 + 15x) = 0$$

$$\det = 10x^2 - 8x^2 + 20x - 15x - 3 + 5 = 0$$

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

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

$$\Delta = 25 - 16$$

$$\Delta = 9$$

$$\frac{-5 \pm 3}{4}$$

$$x_1 = -2/4 = -1/2$$

$$x_2 = -8/4 = -2$$

$$3) \begin{vmatrix} x & 0 & 0 & 3 \\ -1 & x & 0 & 0 \\ 0 & -1 & x & 1 \\ 0 & 0 & -1 & -2 \end{vmatrix} \quad x \cdot \text{cof}(a_{22})$$

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

$$3) \begin{vmatrix} x & 0 & 0 & 3 \\ -1 & x & 0 & 0 \\ 0 & -1 & x & 1 \\ 0 & 0 & -1 & -2 \end{vmatrix} \quad x \cdot \text{cof}(a_{22}) \quad (2+2=\text{par})$$

$$\begin{vmatrix} x & 0 & 3 \\ 0 & x & 1 \\ 0 & -1 & -2 \end{vmatrix} \quad \begin{vmatrix} x & 0 \\ 0 & x \end{vmatrix} \quad (-2x^2) - (-x)$$

$$-2x^2 - (-x)$$

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

$$-2x^3 + x^2$$

$$-1 \cdot \text{cof}(a_{32}) \quad (3+2=\text{impar})$$

$$\begin{vmatrix} x & 0 & 3 \\ -1 & 0 & 0 \\ 0 & -1 & -2 \end{vmatrix} \quad \begin{vmatrix} x & 0 \\ -1 & 0 \end{vmatrix} \quad (3)+(0)$$

$$-1 \cdot (3)$$

$$-3 \quad \leftarrow \text{inserte}$$

$$= 3$$

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

$$(A)$$

$$4) \quad A = \begin{vmatrix} x & 1 & 0 & 0 & 0 \\ 0 & x & 1 & 0 & 0 \\ 0 & 0 & x & 1 & 0 \\ 0 & 0 & 0 & x & k \\ 0 & 0 & 0 & 1 & x \end{vmatrix} \rightarrow X \cdot X \cdot \begin{vmatrix} x & 1 & 0 \\ 0 & x & k \\ 0 & 1 & x \end{vmatrix} \begin{vmatrix} x & 1 \\ 0 & x \end{vmatrix} \begin{matrix} (x^3) - (kx) \\ x^2 \cdot (x^3 - kx) \\ x^5 - kx^3 \end{matrix}$$

$$f(x) = \det A$$

$$f(x) = x^5 - kx^3$$

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

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

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

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

$$f(-2) = 40 = 8k$$

$$k = 40/8 = 5$$

(D)