

matrizes básicas

CÁLCULO GERAL DE DETERMINANTES

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

escolhida

1. cof. (a_{11})

$$1. \begin{vmatrix} 1 & 1 \\ -1 & 1 \end{vmatrix} \rightarrow 1 - (-1) = 2$$

~~0. cof. (a_{21})~~~~0. cof. (a_{31})~~

$$\det A = 2$$

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

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1. cof. (b_{11})

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

$$0 + 3 + 0 = 3 \quad 0 - 3 + 0 = -3$$

$$-3 - 3 = -6$$

d. cof. (b_{21})

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

$$0 + 0 + 0 = 0 \quad 0 + 0 + 0 = 0$$

$$0 - 0 = 0$$

Resposta = $\det A = 2$ e

$$\det B = -6$$

$$\det B = -6$$

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②

x^2	x	$-1/10$	
4,5	0	5	2
10	0	4	2
1	1	1	1

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1. cof(a_{42})

x^2	x	$-1/10$	x^2	x
4,5	5	2	4,5	5
10	4	2	10	4

$-50/10 + 8x^2 + 15x \cdot 10x^2 + 20x - 30/10$

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

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

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

$$a = 2 \quad b = 5 \quad c = 2$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$\Delta = b^2 - 4ac$$

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

$$\Delta = 25 - 16$$

$$\Delta = 9$$

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

$$x' = \frac{-5 - 3}{4} = -2$$

$$x'' = \frac{-5 + 3}{4} = -1/2$$

$$x = -1/2, -2$$

③

x	0	0	3
-1	x	0	0
0	-1	x	1
0	0	-1	-2

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x. cof(a_{11})

x	0	0	3
-1	x	0	0
0	-1	x	1
0	0	-1	-2

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

$x \cdot (-2x^2 + x) = -2x^3 + x^2$

$$-1 \cdot \text{cof}(a_{21}) \quad 0 + 0 + 0$$

$$i+j$$

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

$$2+1 \rightarrow$$

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

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

$$3 \text{ (ímpar)}$$

$$\text{Então, } -3$$

alternativa A)

$$0 + 0 + 3$$

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

(4)
$$\begin{vmatrix} x & 1 & 0 & 0 & 0 \\ 0 & x & 1 & 0 & 0 \\ 0 & 0 & x & 1 & 0 \\ 0 & 0 & 0 & x & k \\ 0 & 0 & 0 & 1 & x \end{vmatrix}$$

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

escolhido

x. cof(11)

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

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$$\rightarrow x \cdot \begin{vmatrix} x & 1 & 0 & x & 1 \\ 0 & x & k & 0 & x \\ 0 & 1 & x & 0 & 1 \end{vmatrix} \rightarrow x^3 - xk$$

$x^3 + 0 + 0$

$$x \cdot (x \cdot (x^3 - xk))$$

$$x^2 \cdot (x^3 - xk)$$

$$x^5 - x^3k \rightarrow \det A$$

$$f(-2) = 8$$

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

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

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

$$-32 + 8k = 8$$

$$8k = 8 + 32$$

$$8k = 40$$

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

$$k = 5$$

alternativa D)