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Tarefa 5 – Propriedades

1.

$$\begin{vmatrix} p & 2 & 2 \\ p & 4 & 4 \\ p & 4 & 1 \end{vmatrix} = 18$$

$8p + 16p + 20 = 26p$

$4p + 8p + 8p = 20p$

$(-12) + (-24) + (-3) = -39$

$$\begin{vmatrix} p & -1 & 2 \\ p & -2 & 4 \\ p & -2 & 1 \end{vmatrix} = \begin{vmatrix} 3 & -1 & 2 \\ 3 & -2 & 4 \\ 3 & -2 & 1 \end{vmatrix}$$

$-6 + (-12) + (-12) = -30$

$\det = -30 - (-39) = 9$

$20p - 26p = -18$

$-6p = -18$

$p = \frac{-18}{6} = \boxed{3}$

R: c) 3

2.

$$A = \begin{bmatrix} a_{11} & a_{12} & a_{13} & a_{14} \\ a_{21} & a_{22} & a_{23} & a_{24} \\ a_{31} & a_{32} & a_{33} & a_{34} \\ a_{41} & a_{42} & a_{43} & a_{44} \end{bmatrix}$$

$\det A = -6$

$\det B = K^n \cdot \det A$

$\det(2A) = x - 97$

$x - 97 = 2^4 \cdot (-6)$

$x - 97 = 16 \cdot (-6)$

$x - 97 = -96$

$x = 97 - 96$

$x = 1$

R: c) 1

3.

$\det B = K \cdot \det A$

$\det B = \left(\frac{1}{x}\right) \cdot y \cdot \det A$

$\det B = \left(\frac{x}{y}\right) \cdot \det A$

$\det B = \frac{\det A}{\left(\frac{x}{y}\right)}$

$\begin{bmatrix} a_{11} & a_{12} \end{bmatrix} \cdot \left(y \cdot \frac{a_{11}}{x}\right) \left(y \cdot \frac{a_{12}}{x}\right)$

$\frac{y \det}{x}$

R: c) $\frac{x}{y}$

4.

$\begin{pmatrix} 2 & 1 & 0 \\ K & K & K \\ 1 & 2 & -2 \end{pmatrix} = 10$

$0 + 4K + (-2K) = 2K$

$-4K + K - (4K - 2K) = 10$

$-4K + K - 2K = 10$

$-10 = -5K$

$K = \frac{10}{5}$

$-4K + K + 0 = -3K$

$0 + (-12) + (-4) = -16$

$\begin{pmatrix} 2 & 1 & 0 \\ 2+4 & -2+3 & -2-1 \\ 1 & 2 & -2 \end{pmatrix}$

$\det = -7 - (-16) = 9$

$-4 + (-3) + 10 = -7$

R: c) 9

5

$\begin{vmatrix} 1 & -11 & 6 \\ -2 & 4 & -3 \\ -3 & -7 & 2 \end{vmatrix}$ $\times 2$

$x = 2$

$6x - 11 = 1$

$6 \cdot 2 - 11 = 1$

$12 - 11 = 1$

$-3 \cdot 2 = 6$

$-6 + 4 = -2$

$2 \cdot 2 = 4$

$4 - 7 = -3$

6.

$2x^2 + (-12) + 9x$

1	x	x^2	1	x
1	2	4	1	2
1	-3	9	1	3

$-18 + 4x + (-3x)^2$

$18 + 4x - 3x^2 - 2x^2 + 12 - 9x = 0$

$-5x^2 - 5x + 30 = 0$

$x^2 + x - 6 = 0$

$\Delta = b^2 - 4ac$

$\Delta = 1^2 - 4.1.-6$

$\Delta = 1 + 24$

$\boxed{\Delta = 25}$

$x = \frac{-b \pm \sqrt{\Delta}}{2.a}$

$x = \frac{1 \pm \sqrt{25}}{2.1}$

$x_1 = \frac{-1+5}{2} = \frac{4}{2} = \boxed{2}$

$x_{11} = \frac{-1-5}{2} = \frac{-6}{2} = \boxed{-3}$

7.

1	0	0	0	0
2	2	0	0	0
3	2	1	0	0
4	2	3	-2	0
5	1	2	3	3

$det = 1.2.1.-2.3 = -12$

$\boxed{R.\ d) -12}$