

2ª Prova:

$$\textcircled{1} \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix} = \begin{pmatrix} (-1)^1 & (-1)^2 \\ (-2)^1 & (-2)^2 \end{pmatrix} = \begin{bmatrix} -1 & 1 \\ -2 & -4 \end{bmatrix}$$

$$\begin{bmatrix} -1 & 1 \\ -2 & -4 \end{bmatrix} \cdot \begin{bmatrix} a & b \\ c & d \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

$$-1a + 1c = 1^{(-2)} \quad -1b + 1d = 0^{(-2)}$$

$$-2a + 4c = 0 \quad -2b + 4d = 1$$

$$2a - 2c = -2 \quad 2b - 2d = 0$$

$$A^{-1} = \begin{bmatrix} -2 & \frac{1}{2} \\ -1 & \frac{1}{2} \end{bmatrix}$$

$$2c = -2 \quad -a - 1 = 1 \quad 2d = 1 \quad -b + 1 = 0$$

$$c = -1 \quad a = -2 \quad d = \frac{1}{2} \quad b = 1$$

$$c = -1 \quad a = -2 \quad d = \frac{1}{2} \quad b = 1$$

$$\textcircled{2} \begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{bmatrix} = \begin{bmatrix} 1 & -1 & 1 \\ 1 & 1 & -1 \\ 2 & 1 & 1 \end{bmatrix} = +1 + 1 - 2 + 1 + 2 + 1 = 4$$

$$a_{11} = (-1)^{1+1} = 1$$

$$\det A^{-1} = \begin{pmatrix} 1 \\ 4 \end{pmatrix}$$

$$a_{12} = (-1)^{1+2} = -1$$

$$a_{13} = (-1)^{1+3} = 1$$

$$a_{21} = 2 - 1 = 1$$

$$a_{22} = (-1)^{2+2} = 1$$

$$a_{23} = (-1)^{2+3} = -1$$

$$a_{31} = 3 - 1 = 2$$

$$a_{32} = 3 - 2 = 1$$

$$a_{33} = (-1)^{3+3} = 1$$

$$\textcircled{3} \begin{cases} x + y + 2z = 5 \\ 2x + 2y + 4z = 10 \\ 3x + 3y + 6z = 14 \end{cases}$$

$$(2x + 2y + 4z) \div 2 = 10 \div 2$$

$$2x \div 2 + 2y \div 2 + 4z \div 2 = 5$$

$$x + y + 2z = 5$$

$$(3x + 3y + 6z) \div 3 = 14 \div 3$$

$$3x \div 3 + 3y \div 3 + 6z \div 3 = \frac{14}{3}$$

$$x + y + 2z = \frac{14}{3}$$

$$\begin{cases} x + y + 2z = 5 \\ x + y + 2z = 5 \\ x + y + 2z = \frac{14}{3} \end{cases}$$

$$(x, y, z) \in \emptyset$$

$$\textcircled{4} \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix} \begin{matrix} 2^i \text{ se } i \leq j \\ j^i \text{ se } i > j \end{matrix}$$

$$\begin{bmatrix} 2^1 & 2^2 \\ 1^2 & 2^2 \end{bmatrix} \rightarrow \left(\begin{bmatrix} 2 & 1 \\ 4 & 4 \end{bmatrix} + \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \right) = \begin{bmatrix} 3 & 1 \\ 4 & 5 \end{bmatrix}$$

$$d = \begin{bmatrix} 3 & 1 \\ 4 & 5 \end{bmatrix} = 15 - 4 = \textcircled{11}$$

$$(5) \begin{cases} -x + z = 3 \\ 2x - y + z = -3 \\ x - 2y - z = -9 \end{cases}$$

$$\begin{cases} x - 2y - z = -9 \quad (-2)(+1) \\ 2x - y + z = -3 \\ -x + z = 3 \end{cases}$$

$$\begin{aligned} 2x - y + z &= -3 \\ -2x + 4y + 2z &= 18 \\ 3y + 3z &= 15 \end{aligned}$$

$$\begin{aligned} x - 2y - z &= -9 \\ -x + z &= 3 \\ -2y &= -6 \\ y &= 3 \end{aligned}$$

$$\begin{aligned} 3 \cdot 3 + 3z &= 15 \\ z &= 2 \end{aligned}$$

$$\begin{aligned} x - 2 \cdot 3 - 2 &= -9 \\ x &= -1 \end{aligned}$$

$$S = \{-1, 3, 2\}$$