

### Tarefa Básica

1.

$$a) \begin{pmatrix} 2 & 3 \\ 1 & 5 \end{pmatrix}^3 \rightarrow 10 - 3 = \boxed{7} \quad b) \begin{pmatrix} -2 & -4 \\ 3 & 6 \end{pmatrix}^{-12} \rightarrow -12 - (-12) = \boxed{0}$$

$$c) \begin{pmatrix} 3 & -1 & 1 \\ 2 & 1 & -1 \\ 1 & 4 & -2 \end{pmatrix} \begin{matrix} 1 + (-1) + 4 = -7 \\ 3 - 1 \\ -6 + 1 + 8 = 3 \end{matrix} \rightarrow 3 - (-7) = \boxed{10}$$

$$d) \begin{pmatrix} 3 & 2 & -1 \\ 2 & 3 & 1 \\ 1 & 1 & 4 \end{pmatrix} \begin{matrix} -9 + 9 + 16 = 16 \\ 3 - 2 \\ 36 + 2 + (-2) = 36 \end{matrix} \rightarrow 36 - 16 = \boxed{20}$$

$$2. A = \begin{pmatrix} -3 & 0 & 0 \\ 0 & -3 & 0 \\ 0 & 0 & -3 \end{pmatrix} \begin{matrix} -3^0 & 0^0 \\ 0 & -3 \\ -27 & 0 & 0 \end{matrix} \rightarrow -27 - 0 = \boxed{-27}$$

$$3. \begin{pmatrix} x & 1 & x \\ 3 & x & 4 \\ 1 & 3 & 3 \end{pmatrix} \begin{matrix} x^2 + 12x + 9 \\ x \\ 1 \end{matrix}$$

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

$$2x^2 - 3x - 5 = -3$$

$$2x^2 - 3x - 2 = 0 \quad :2$$

$$x^2 - 1,5x - 1 = 0$$

$$-0,5 + 2 = 1,5$$

$$-0,5 \cdot 2 = -1$$

$$\left\{ -\frac{1}{2}; 2 \right\}$$

4. 
$$\begin{array}{ccc|ccc} x-1 & -1 & 0 & x-1 & -1 & 0 \\ 0 & x+1 & -1 & 0 & x+1 & -1 \\ 2 & -1 & x+1 & 2 & -1 & x+1 \end{array}$$

①  $(x-1) \cdot (x+1) - (x+1)$   $x^3 + x^2 - x + 1 - (x+1) = 2$   
 $x^2 + x - x - 1 \cdot (x+1)$   $x^3 + x^2 - 2x + 2 - 2 = 0$   
 $(x^2 - 1) \cdot (x+1)$   $x^3 + x^2 - 2x = 0$   
 $\rightarrow x^3 + x^2 - x - 1$   $-2 + 1 = -1$   
 $\rightarrow 2$   $-2 \cdot 1 = -2 \mid 2$   
 $\rightarrow 0$   $1$

②  $\rightarrow 0$   $|-2 + 1 = -1|$   
 $\rightarrow x - 1$   
 $\rightarrow 0$

5.  $(0 \ 1 \ 2)$

5. 
$$B = \begin{pmatrix} 0 & 1 & 2 \\ -1 & 0 & 1 \end{pmatrix}$$

$$A = \begin{pmatrix} -1 & -4 \\ 1 & -2 \\ 3 & 0 \end{pmatrix} \quad \begin{pmatrix} 0+1 & -1+0 & -2-1 \\ 0+2 & 1+0 & 2-2 \\ 0+0 & 3+0 & 6+0 \end{pmatrix}$$

$$\begin{array}{ccc|ccc} 4 & -1 & -6 & 4 & -1 & -6 \\ 2 & 1 & 0 & 2 & 1 & 0 \\ 0 & 3 & 6 & 0 & 3 & 6 \end{array}$$
  
 $\rightarrow -12 - (-12) = 0$



6.

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

$$A = \begin{pmatrix} 2 & 0 & -1 \\ -1 & 1 & 0 \end{pmatrix} \begin{pmatrix} 2+0+0 & -2+0-2 \\ -1-1+0 & 1+1+0 \end{pmatrix}$$

$$\begin{vmatrix} 2 & -4 \\ -2 & 2 \end{vmatrix} \begin{matrix} 8 \\ 4 \end{matrix}$$

$$\rightarrow 4 - 8 = \boxed{-4}$$

