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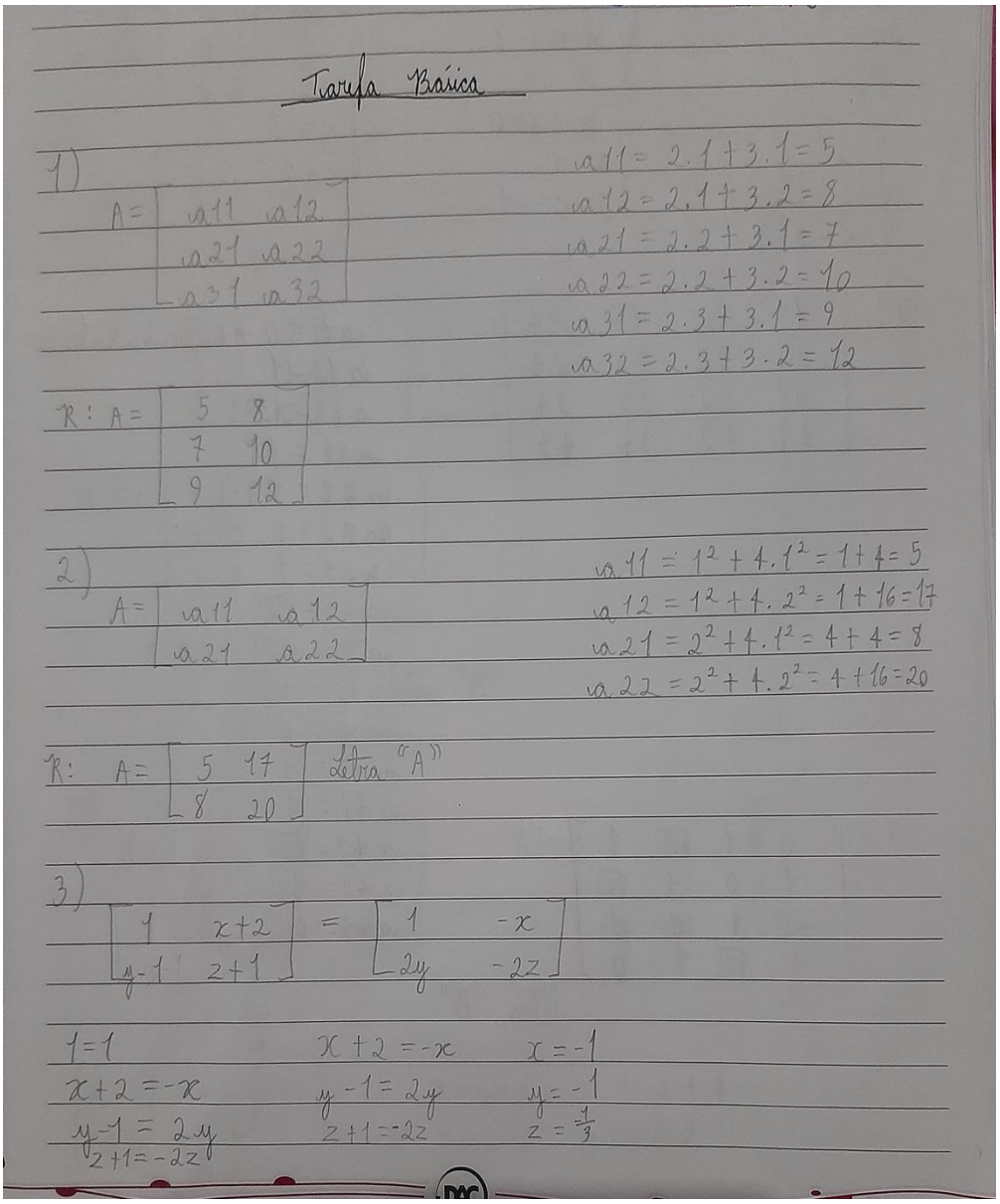
Sala: CTII 317



Tarefa Básica

1)

$A = \begin{bmatrix} a11 & a12 \\ a21 & a22 \\ a31 & a32 \end{bmatrix}$

$a11 = 2.1 + 3.1 = 5$
$a12 = 2.1 + 3.2 = 8$
$a21 = 2.2 + 3.1 = 7$
$a22 = 2.2 + 3.2 = 10$
$a31 = 2.3 + 3.1 = 9$
$a32 = 2.3 + 3.2 = 12$

R: $A = \begin{bmatrix} 5 & 8 \\ 7 & 10 \\ 9 & 12 \end{bmatrix}$

2)

$A = \begin{bmatrix} a11 & a12 \\ a21 & a22 \end{bmatrix}$

$a11 = 1^2 + 4.1^2 = 1 + 4 = 5$
$a12 = 1^2 + 4.2^2 = 1 + 16 = 17$
$a21 = 2^2 + 4.1^2 = 4 + 4 = 8$
$a22 = 2^2 + 4.2^2 = 4 + 16 = 20$

R: $A = \begin{bmatrix} 5 & 17 \\ 8 & 20 \end{bmatrix}$ Letra "A"

3)

$\begin{bmatrix} 1 & x+2 \\ y-1 & z+1 \end{bmatrix} = \begin{bmatrix} 1 & -x \\ 2y & -2z \end{bmatrix}$

$1 = 1$
$x + 2 = -x$
$y - 1 = 2y$
$z + 1 = -2z$

$x + 2 = -x$ $\quad x = -1$
$y - 1 = 2y$ $\quad y = -1$
$z + 1 = -2z$ $\quad z = \frac{-1}{3}$

4) $\begin{bmatrix} 3 & -x \\ 3x & x \end{bmatrix} = \begin{bmatrix} 3 & y \\ 2x+1 & z-1 \end{bmatrix}$

$3 = 3$

$-x = y$

$3x = 2x + 1$

$x = z - 1$

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

$\begin{cases} -x - y = 0 \\ x = 1 \\ x - z = -1 \end{cases}$

$\begin{cases} 1 + y = 0 \\ 1 - z = -1 \end{cases}$

$x = 1$

$y = -1$

$z = 2$

ordenar e igualar

$\begin{cases} -x + y = 0 \\ x = 1 \\ x - z = -1 \end{cases}$

$\begin{cases} y = -1 \\ z = 2 \end{cases}$

5)

11	12	13	14
21	22	23	24
31	32	33	34
41	42	34	44

$a11 = 0$ → Distância entre i j

$a12 = 1$

$a13 = \sqrt{2}$

$a14 = 1$

$a21 = 1$

$a22 = 0$

$a23 = 1$

$a24 = \sqrt{2}$

$a31 = \sqrt{2}$

$a32 = 1$

$a33 = 0$

$a34 = 1$

$a41 = 1$

$a42 = \sqrt{2}$

$a43 = 1$

$a44 = 0$

$A = \begin{bmatrix} 0 & 1 & \sqrt{2} & 1 \\ 1 & 0 & 1 & \sqrt{2} \\ \sqrt{2} & 1 & 0 & 1 \\ 1 & \sqrt{2} & 1 & 0 \end{bmatrix}$

Letra "B"

6) 2. $\begin{bmatrix} -1 \\ 2 \\ 3 \end{bmatrix} - \begin{bmatrix} 0 \\ -2 \\ 1 \end{bmatrix} + A \begin{bmatrix} -2 \\ 4+2 \\ 6-1 \end{bmatrix}$

$\begin{bmatrix} -2 \\ 4 \\ 6 \end{bmatrix} - \begin{bmatrix} 0 \\ -2 \\ 1 \end{bmatrix} \quad \begin{bmatrix} -2 \\ 6 \\ 5 \end{bmatrix}$ letra "D"

$\begin{bmatrix} -2-0 \\ 4-(-2) \\ 6-1 \end{bmatrix}$

7) $A-B = \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix} - \begin{bmatrix} -1 & 2 \\ 3 & 0 \\ 2 & 1 \end{bmatrix}$

$A-B = \begin{bmatrix} 1-(-1) & 2-2 \\ 3-3 & 4-0 \\ 5-2 & 6-1 \end{bmatrix}$

$A-B = \begin{bmatrix} 2 & 0 \\ 0 & 4 \\ 3 & 5 \end{bmatrix}$ letra "B"

8)

$A = \begin{bmatrix} 2 & -1 & 2y \\ x & 0 & -2 \\ 4 & 3 & 2 \end{bmatrix} \quad A^T = \begin{bmatrix} 2 & x & 4 \\ -1 & 0 & 3 \\ 2y & -2 & 2 \end{bmatrix}$

$A = A^T$

$\begin{cases} x = -1 \\ 2y = 4 \\ -2 = 3 \end{cases} \quad \begin{matrix} y = 2 \\ 2 = 4 \end{matrix}$

$x+y+z = -1+2+4$

$x+y+z = 5$

9) $A = \begin{bmatrix} a11 & a12 \\ a21 & a22 \\ a31 & a32 \end{bmatrix}$ $B = \begin{bmatrix} a11 & a12 \\ a21 & a22 \\ a31 & a32 \end{bmatrix}$

$a11 = 1$
$a12 = 3$
$a21 = 3$
$a22 = 1$
$a31 = 4$
$a32 = 5$

$b11 = 1$
$b12 = 0$
$b21 = 0$
$b22 = 2$
$b31 = 0$
$b32 = 0$

$A = \begin{bmatrix} 1 & 3 \\ 3 & 1 \\ 4 & 5 \end{bmatrix} + B = \begin{bmatrix} 1 & 0 \\ 0 & 2 \\ 0 & 0 \end{bmatrix}$

$A + B = \begin{bmatrix} 2 & 3 \\ 3 & 3 \\ 4 & 5 \end{bmatrix}$ letra "C"

10) $M = \begin{bmatrix} x & 8 \\ 10 & y \end{bmatrix}$ $N = \begin{bmatrix} y & 6 \\ 12 & x+11 \end{bmatrix}$ $P = \begin{bmatrix} 7 & 16 \\ 23 & 13 \end{bmatrix}$

$\frac{3}{2}M + \frac{2}{3}N = P$

$\frac{3}{2} \cdot \begin{bmatrix} x & 8 \\ 10 & y \end{bmatrix}$ $\frac{2}{3} \cdot \begin{bmatrix} y & 6 \\ 12 & x+11 \end{bmatrix}$

$\begin{bmatrix} \frac{3x}{2} & 12 \\ 15 & \frac{3}{2}y \end{bmatrix}$ $\begin{bmatrix} \frac{2y}{3} & 4 \\ 8 & \frac{2x+8}{3} \end{bmatrix}$

$\begin{bmatrix} \frac{3x}{2} & 12 \\ 15 & \frac{3y}{2} \end{bmatrix} + \begin{bmatrix} \frac{2y}{3} & 4 \\ 8 & \frac{2x+8}{3} \end{bmatrix}$

$\begin{bmatrix} \frac{3x}{2} + \frac{2y}{3} & 12 + 4 \\ 15 + 8 & \frac{3y}{2} + \left(\frac{2x+8}{3}\right) \end{bmatrix}$

$\frac{3x}{2} + \frac{2y}{3} = 7$
$\frac{2x+8}{3} + \frac{3y}{2} = 13$
$\frac{9x}{6} + 2 \cdot \frac{2y}{6} = \frac{42}{6}$

$\frac{2(2x+8)}{6} + 3 \cdot \frac{3y}{6} = 13.6$
$9x + 4y = 42$
$4x + 16 + 9y = 78$

$9x + 4y = 42$
$4x + 9y = 62$
$9x - 4x + 4y - 9y = 42 - 62$
$5x - 5y = -20$
$x - y = -4$
$y - x = 4$ letra "B"