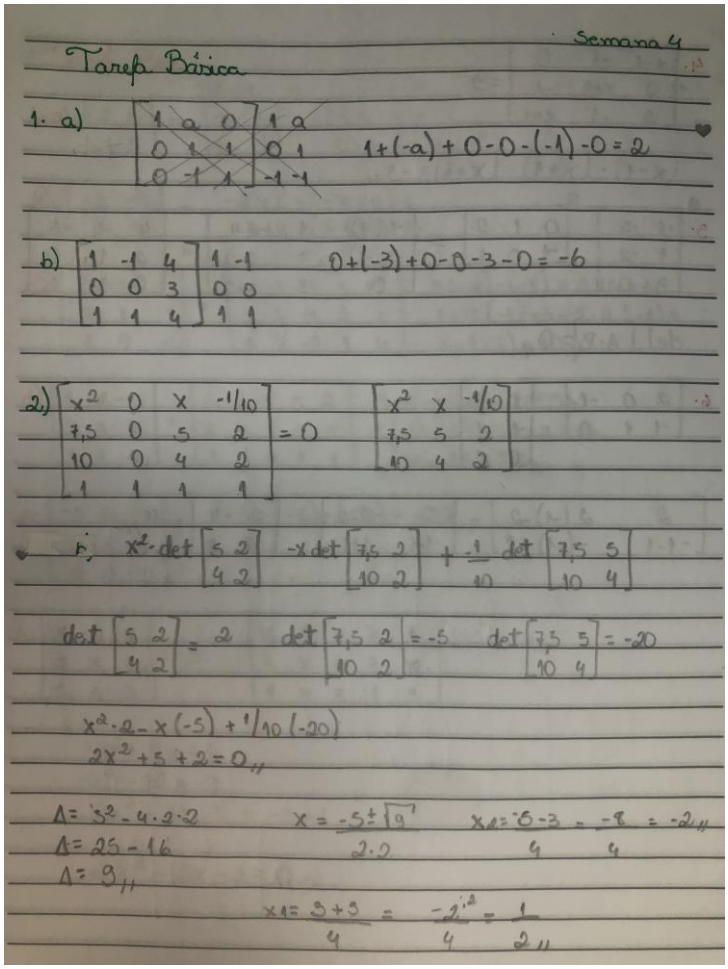

Semana 4

Tarefa Básica

1. a)
$$\begin{bmatrix} 1 & a & 0 \\ 0 & 1 & 1 \\ 0 & -1 & 1 \end{bmatrix} \begin{matrix} 1 & a \\ 0 & 1 \\ -1 & -1 \end{matrix} \qquad 1+(-a)+0-0-(-1)-0=2$$

b)
$$\begin{bmatrix} 1 & -1 & 4 \\ 0 & 0 & 3 \\ 1 & 1 & 4 \end{bmatrix} \begin{matrix} 1 & -1 \\ 0 & 0 \\ 1 & 1 \end{matrix} \qquad 0+(-3)+0-0-3-0=-6$$

2)
$$\begin{bmatrix} x^2 & 0 & x & -1/10 \\ 7,5 & 0 & 5 & 2 \\ 10 & 0 & 4 & 2 \\ 1 & 1 & 1 & 1 \end{bmatrix} = 0 \qquad \begin{bmatrix} x^2 & x & -1/10 \\ 7,5 & 5 & 2 \\ 10 & 4 & 2 \end{bmatrix}$$

$$x^2 \cdot \det\begin{bmatrix} 5 & 2 \\ 4 & 2 \end{bmatrix} - x \det\begin{bmatrix} 7,5 & 2 \\ 10 & 2 \end{bmatrix} + \frac{-1}{10} \det\begin{bmatrix} 7,5 & 5 \\ 10 & 4 \end{bmatrix}$$

$$\det\begin{bmatrix} 5 & 2 \\ 4 & 2 \end{bmatrix} = 2 \qquad \det\begin{bmatrix} 7,5 & 2 \\ 10 & 2 \end{bmatrix} = -5 \qquad \det\begin{bmatrix} 7,5 & 5 \\ 10 & 4 \end{bmatrix} = -20$$

$$x^2 \cdot 2 - x(-5) + {}^{1}/_{10}(-20)$$

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

$$\Delta = 5^2 - 4 \cdot 2 \cdot 2 \qquad x = \frac{-5 \pm \sqrt{9}}{2 \cdot 2} \qquad x_2 = \frac{-5-3}{4} = \frac{-8}{4} = -2$$

$$\Delta = 25 - 16$$

$$\Delta = 9$$

$$x_1 = \frac{-5+3}{4} = \frac{-2}{4} = \frac{1}{2}$$

3) $\begin{bmatrix} x & 0 & 0 & 3 \\ -1 & x & 0 & 0 \\ 0 & -1 & x & 1 \\ 0 & 0 & -1 & -2 \end{bmatrix} = -1 \begin{bmatrix} x\cdot(-1) & 0\cdot(-1) & 0\cdot(-1) & 3 \\ -1 & x\cdot(-1) & 0\cdot(-1) & 0\cdot(-1) \\ 0\cdot(-1) & 0\cdot(-1) & -1 & -2 \end{bmatrix}$

$\begin{bmatrix} -x & 0 & 0 & 3 \\ 1 & x & 0 & 0 \\ 0 & -1 & x & 1 \\ 0 & 0 & -1 & -2 \end{bmatrix} \quad (-1)\begin{bmatrix} -x & 0 & 0 & 3 \\ 1 & x & 0 & 0 \\ 0 & -1 & x & 1 \\ 0 & 0 & -1 & -2 \end{bmatrix} = \begin{bmatrix} -1 & x & 0 & 0 \\ -x & 0 & 0 & 3 \\ 0 & -1 & x & 1 \\ 0 & 0 & -1 & -2 \end{bmatrix}$

$\begin{bmatrix} 0-(-x)\cdot x & 0-(x)\cdot 0 & 3-(x)\cdot 0 \\ -1-0\cdot x & x-0\cdot 0 & 1-0\cdot 0 \\ 0-0\cdot x & -1-0\cdot 0 & -2-0\cdot 0 \end{bmatrix} = \begin{bmatrix} x^2 & 0 & 3 \\ -1 & x & 1 \\ 0 & -1 & -2 \end{bmatrix} = 2x^3 + x^2 + 3$ //

4) $\begin{bmatrix} x & 1 & 0 & 0 & 0 \\ 0 & x & 1 & 0 & 0 \\ 0 & 0 & x & 1 & 0 \\ 0 & 0 & 0 & x & k \\ 0 & 0 & 0 & 1 & x \end{bmatrix} = \begin{bmatrix} xk \\ 1x \end{bmatrix} = x^2 - 1k = x^3$

$f(x) = x^5 - kx^3$

$f(-2) = -32 + 8k = 8$

$8k = 40$

$k = 40/8 = 5$ //