

Universidade Estadual do Sudoeste da Bahia

Licenciatura em Física-Álgebra Linear

Lista de Exercícios de Escalonamento

Calcule o determinante das matrizes abaixo e utilizando escalonamento, encontre a matriz inversa:

1. $A = \begin{pmatrix} 1 & 4 \\ 2 & 7 \end{pmatrix}$

2. $A = \begin{pmatrix} -3 & 6 \\ 4 & 5 \end{pmatrix}$

3. $A = \begin{pmatrix} 3 & 4 & -1 \\ 1 & 0 & 3 \\ 2 & 5 & -4 \end{pmatrix}$

4. $A = \begin{pmatrix} 1 & 0 & 1 \\ 0 & 1 & 1 \\ 1 & 1 & 0 \end{pmatrix}$

5. $A = \begin{pmatrix} 1 & -1 & -2 & -1 \\ 2 & 1 & -4 & -1 \\ 3 & 2 & 1 & -1 \\ 4 & 3 & 2 & 1 \end{pmatrix}$

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

7. $A = \begin{pmatrix} 0 & 1 & 1 \\ 1 & 0 & 2 \\ 2 & 1 & 0 \end{pmatrix}$

8. $A = \begin{pmatrix} 1 & 1 & 1 \\ 1 & 0 & 1 \\ 0 & 0 & -1 \end{pmatrix}$

9. $A = \begin{pmatrix} 1 & 0 & -1 \\ 1 & -1 & 2 \\ 2 & -1 & 3 \end{pmatrix}$

10. $A = \begin{pmatrix} 3 & -1 & 1 \\ 1 & -3 & -1 \\ 1 & 1 & -3 \end{pmatrix}$

11. $A = \begin{pmatrix} 1 & 0 & 1 \\ -1 & 1 & -1 \\ 2 & 3 & -2 \end{pmatrix}$

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

$$13. A = \begin{pmatrix} -1 & 1 & -1 \\ 0 & 0 & 2 \\ 4 & -2 & 0 \end{pmatrix}$$

$$14. A = \begin{pmatrix} 1 & 1 & 0 \\ 2 & 1 & 0 \\ 3 & 4 & 1 \end{pmatrix}$$

$$15. A = \begin{pmatrix} -2 & -1 & 0 \\ 1 & 0 & 1 \\ -2 & 2 & -3 \end{pmatrix}$$

$$16. A = \begin{pmatrix} 1 & -2 & 0 \\ -1 & 3 & 0 \\ 0 & -5 & 5 \end{pmatrix}$$

GABARITO

$$1) A^{-1} = \begin{pmatrix} -7 & 4 \\ 2 & -1 \end{pmatrix}$$

$$2) A^{-1} = \frac{1}{13} \begin{pmatrix} -\frac{5}{3} & 2 \\ \frac{4}{3} & 1 \end{pmatrix}$$

$$3) A^{-1} = \begin{pmatrix} \frac{3}{2} & -\frac{11}{10} & -\frac{6}{5} \\ -1 & 1 & 1 \\ -\frac{1}{2} & \frac{7}{10} & \frac{2}{5} \end{pmatrix}$$

$$4) A^{-1} = \frac{1}{2} \begin{pmatrix} 1 & -1 & 1 \\ -1 & 1 & 1 \\ 1 & 1 & -1 \end{pmatrix}$$

$$5) A^{-1} = \frac{1}{23} \begin{pmatrix} 11 & -3 & -2 & 6 \\ -16 & \frac{15}{2} & 5 & -\frac{7}{2} \\ 1 & -\frac{11}{2} & 4 & -\frac{1}{2} \\ 2 & \frac{1}{2} & -15 & \frac{21}{2} \end{pmatrix}$$

$$6) A^{-1} = \frac{1}{4} \begin{pmatrix} 1 & -1 & 1 \\ 5 & -1 & -3 \\ 3 & 1 & -1 \end{pmatrix}$$

$$7) A^{-1} = \frac{1}{5} \begin{pmatrix} -2 & 1 & 2 \\ 4 & -2 & 1 \\ 1 & 2 & -1 \end{pmatrix}$$

$$8) A^{-1} = \begin{pmatrix} 0 & 1 & 1 \\ 1 & -1 & 0 \\ 0 & 0 & -1 \end{pmatrix}$$

$$9) A^{-1} = \frac{1}{2} \begin{pmatrix} 1 & -1 & 1 \\ -1 & -5 & 3 \\ -1 & -1 & 1 \end{pmatrix}$$

$$\begin{aligned}
10) \quad A^{-1} &= \frac{1}{16} \begin{pmatrix} 5 & -1 & 2 \\ 1 & -5 & 2 \\ 2 & -2 & -4 \end{pmatrix} \\
11) \quad A^{-1} &= \frac{1}{4} \begin{pmatrix} -1 & -3 & 1 \\ 4 & 4 & 0 \\ 5 & 3 & -1 \end{pmatrix} \\
12) \quad A^{-1} &= \frac{1}{2} \begin{pmatrix} 1 & -1 & 1 \\ 1 & 3 & -1 \\ 1 & 1 & -1 \end{pmatrix} \\
13) \quad A^{-1} &= \frac{1}{2} \begin{pmatrix} 2 & 1 & 1 \\ 4 & 2 & 1 \\ 0 & 1 & 0 \end{pmatrix} \\
14) \quad A^{-1} &= \begin{pmatrix} -1 & 1 & 0 \\ 2 & -1 & 0 \\ -5 & 1 & 1 \end{pmatrix} \\
15) \quad A^{-1} &= \frac{1}{3} \begin{pmatrix} -2 & -3 & -1 \\ 1 & 6 & -2 \\ 2 & 6 & 1 \end{pmatrix} \\
16) \quad A^{-1} &= \begin{pmatrix} 3 & 2 & 0 \\ 1 & 1 & 0 \\ 1 & 1 & 1/5 \end{pmatrix}
\end{aligned}$$