TAREFA BÁSICA - DETERMINANTES

1) a)

$$\begin{bmatrix} 2 & 3 \\ 1 & 5 \end{bmatrix} \quad 3 \quad 10$$

$DET = 10 - 3 = 7$

b)

$$\begin{bmatrix} -2 & -4 \\ 3 & 6 \end{bmatrix} \quad -12 \quad -12$$

$DET = -12 - (-12) = 0$

c)

$$\left[\begin{array}{ccc|cc} 3 & -1 & 1 & 3 & -1 \\ 2 & 1 & -1 & 2 & 1 \\ 1 & 4 & -2 & 1 & 4 \end{array}\right]$$

$DET = 3 - (-7) = 10$

$-6 + 1 + 8 = 3$

$1 + (-12) + 4 = -7$

d)

$-3 + 3 + 16 = 16$

$$\left[\begin{array}{ccc|cc} 3 & 2 & -1 & 3 & 2 \\ 2 & 3 & 1 & 2 & 3 \\ 1 & 1 & 4 & 1 & 1 \end{array}\right]$$

$DET = 36 - (+16) = 20$

$36 + 2 + (-2) = 36$

2)

$0 + 0 + 0 = 0$

$$\left[\begin{array}{ccc|cc} -3 & 0 & 0 & -3 & 0 \\ 0 & -3 & 0 & 0 & -3 \end{array}\right]$$

10

-12

(B) $\begin{bmatrix} -2 & -4 \\ 3 & 6 \end{bmatrix}$ DET = -12 - (-12) = 0

-12

(C) $\begin{bmatrix} 3 & -1 & 2 \\ 2 & 1 & -1 \\ 1 & 4 & -2 \end{bmatrix}$ DET = 3 - (-7) = 10

-6 + 1 + 8 = 3

1 + (-12) + 4 = -7

-3 + 3 + 16 = 16

(D) $\begin{bmatrix} 3 & 2 & -1 \\ 2 & 3 & 1 \\ 1 & 1 & 4 \end{bmatrix}$ DET = 36 - (+16) = 20

36 + 2 + (-2) = 36

0 + 0 + 0 = 0

(E) $\begin{bmatrix} -3 & 0 & 0 \\ 0 & -3 & 0 \\ 0 & 0 & -3 \end{bmatrix}$ DET = -27 ALTERNATIVA A

-27 + 0 + 0 = -27

③

$x^2+12x+9$

x	1	x
$3x$	4	$3x$
1	3	1

$3x^2+4+9x$

$DET=\{-\frac{1}{2};2\}$

ALTERNATIVA E

$DET=(3x^2+4+9x)-(x^2+12x+9)=-3$

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

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

$2x^2-2-3x=0$

$\Delta=B^2-4AC$

$\Delta=3^2-4.2.-2$

$\Delta=9+16$

$\Delta=25$

$DET=\frac{3\pm\sqrt{25}}{2.2}$ $\Rightarrow x^1=\frac{3+5}{4}=\frac{8}{4}=2$

$x^2=\frac{3-5}{4}=\frac{-2}{4}=-\frac{1}{2}$

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

$A_{ij} = 2i - 3j$ $B_{jk} = k - j$

$A_{11} = 2.1 - 3.1 = -1$ $B_{11} = 1 - 1 = 0$

$A_{12} = 2.1 - 3.2 = -4$ $B_{12} = 2 - 1 = 1$

$A_{21} = 2.2 - 3.1 = 1$ $B_{13} = 3 - 1 = 2$

$A_{22} = 2.2 - 3.2 = -2$ $B_{21} = 1 - 2 = -1$

$A_{31} = 2.3 - 3.1 = 3$ $B_{22} = 2 - 2 = 0$

$A_{32} = 2.3 - 3.2 = 0$ $B_{23} = 3 - 2 = 1$

$$AB = \begin{bmatrix} -1 & -4 \\ 1 & -2 \\ 3 & 0 \end{bmatrix} \begin{bmatrix} 0 & 1 & 2 \\ -1 & 0 & 1 \end{bmatrix}$$

$$AB = \begin{bmatrix} 0+4 & -1+0 & -2-4 \\ 0+2 & 1+0 & 2-2 \\ 0-0 & 3+0 & 6+0 \end{bmatrix}$$

$0+0-12$

$$AB = \begin{bmatrix} 4 & -1 & -6 \\ 2 & 1 & 0 \\ 0 & 3 & 6 \end{bmatrix} \begin{matrix} 4 & -1 \\ 2 & 1 \\ 0 & 3 \end{matrix}$$

$24 - 0 - 36 = -12$

$DET = -12 - (-12) = 0$

ALTERNATIVA C

(6)

$$A = \begin{bmatrix} 2 & 0 & -1 \\ -1 & 1 & 0 \end{bmatrix} \qquad B = \begin{bmatrix} 1 & -1 \\ -1 & 1 \\ 0 & 2 \end{bmatrix}$$

$$AB = \begin{bmatrix} 2+0+0 & -2+0-2 \\ -1-1+0 & 1+1+0 \end{bmatrix}$$

$$AB = \begin{bmatrix} 2 & -4 \\ -2 & 2 \end{bmatrix}$$

8

4

$DET = 4 - 8 = -4$

ALTERNATIVA D