

Calcolare il determinante e il rango delle seguenti matrici:

$$\begin{array}{l} \mathbf{1.} \begin{pmatrix} 1 & 2 & 3 \\ 0 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix} \quad \mathbf{2.} \begin{pmatrix} 1 & 0 & 3 \\ 2 & 0 & 6 \\ 7 & 4 & 0 \end{pmatrix} \quad \mathbf{3.} \begin{pmatrix} 1 & 0 & 3 \\ 1 & 0 & 6 \\ -2 & 4 & 0 \end{pmatrix} \quad \mathbf{4.} \begin{pmatrix} -1 & 0 & 3 \\ 1 & 4 & -3 \\ -2 & 4 & 6 \end{pmatrix} \\ \mathbf{5.} \begin{pmatrix} 2 & 1 & 3 \\ 1 & 1 & -3 \\ -2 & 1 & 0 \end{pmatrix} \quad \mathbf{6.} \begin{pmatrix} 2 & 1 & -3 \\ -1 & 1 & -3 \\ -2 & 1 & 0 \end{pmatrix} \quad \mathbf{7.} \begin{pmatrix} 0 & 1 & -3 \\ 0 & 0 & 0 \\ 0 & 2 & -6 \end{pmatrix} \quad \mathbf{8.} \begin{pmatrix} 0 & 1 & -3 \\ 1 & 0 & 0 \\ 0 & 2 & -6 \end{pmatrix} \\ \mathbf{9.} \begin{pmatrix} 3 & 1 & -3 \\ 1 & 0 & 2 \\ 0 & 2 & -1 \end{pmatrix} \quad \mathbf{10.} \begin{pmatrix} 1 & 2 & 3 \\ 1 & 2 & 3 \\ 1 & 2 & 3 \end{pmatrix} \quad \mathbf{11.} \begin{pmatrix} -1 & 2 & 0 \\ 1 & 2 & 4 \\ 3 & 1 & 1 \end{pmatrix} \quad \mathbf{12.} \begin{pmatrix} -1 & 0 & 0 \\ 1 & 2 & 0 \\ 2 & 1 & 1 \end{pmatrix} \\ \mathbf{13.} \begin{pmatrix} -1 & 0 & 0 \\ 1 & 2 & 4 \\ 0 & 2 & 4 \end{pmatrix} \quad \mathbf{14.} \begin{pmatrix} -1 & 1 & 0 \\ 1 & 2 & 0 \\ 0 & 2 & -1 \end{pmatrix} \quad \mathbf{15.} \begin{pmatrix} -1 & 10 & 0 \\ 1 & 2 & 0 \\ 0 & 1 & 1 \end{pmatrix} \quad \mathbf{16.} \begin{pmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 1 \end{pmatrix} \\ \mathbf{17.} \begin{pmatrix} 0 & 0 & 1 \\ 0 & 0 & 1 \\ 0 & 0 & 1 \end{pmatrix} \quad \mathbf{18.} \begin{pmatrix} -2 & 3 & 1 \\ 2 & -2 & 1 \\ 4 & 0 & 1 \end{pmatrix} \quad \mathbf{19.} \begin{pmatrix} -2 & 0 & -1 \\ 2 & 0 & -1 \\ -4 & 0 & 1 \end{pmatrix} \quad \mathbf{20.} \begin{pmatrix} 1 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 1 \end{pmatrix} \end{array}$$

**Risposte:**

1. Det=-24, Rango=3
2. Det=0, Rango=2
3. Det=-12, Rango=3
4. Det=0, Rango=2
5. Det=21, Rango=3
6. Det=9, Rango=3
7. Det=0, Rango=1
8. Det=0, Rango=2
9. Det=-17, Rango=3
10. Det=0, Rango=1
11. Det=24, Rango=3
12. Det=-2, Rango=3
13. Det=0, Rango=2
14. Det=3, Rango=3
15. Det=-12, Rango=3
16. Det=0, Rango=1
17. Det=0, Rango=1
18. Det=18, Rango=3
19. Det=0, Rango=2
20. Det=0, Rango=2