Evaluating Determinants

1. $\begin{vmatrix} 3 & 9 & 6 \\ 4 & -4 & 4 \\ 10 & 5 & 20 \end{vmatrix}$

2. $\begin{vmatrix} 25 & 40 & 15 \\ -3 & 6 & 21 \\ 8 & 12 & 20 \end{vmatrix}$

3. $\begin{vmatrix} 29 & 26 & 22 \\ 25 & 31 & 27 \\ 63 & 54 & 46 \end{vmatrix}$

4. $\begin{vmatrix} 28 & 27 & 25 \\ 31 & 30 & 26 \\ 36 & 35 & 30 \end{vmatrix}$

5. $\begin{vmatrix} 26 & 29 & 29 \\ 25 & 30 & 27 \\ 25 & 28 & 26 \end{vmatrix}$

6. $\begin{vmatrix} 35 & 73 & 16 \\ 38 & 80 & 23 \\ 32 & 67 & 16 \end{vmatrix}$

7. $\begin{vmatrix} 29 & 30 & 33 \\ 35 & 38 & 42 \\ 28 & 29 & 32 \end{vmatrix}$

8. $\begin{vmatrix} 13 & 16 & 19 \\ 27 & 33 & 39 \\ 28 & 34 & 40 \end{vmatrix}$

9. $\begin{vmatrix} 22 & 32 & 27 \\ 27 & 41 & 34 \\ 20 & 30 & 25 \end{vmatrix}$

10. $\begin{vmatrix} 1 & 1 & 1 & 1 \\ 2 & 3 & 4 & 5 \\ 1 & 3 & 6 & 10 \\ 1 & 4 & 10 & 20 \end{vmatrix}$

11. $\begin{vmatrix} 30 & 11 & 20 & 38 \\ 12 & 6 & 0 & 18 \\ 11 & -2 & 36 & 3 \\ 19 & 6 & 17 & 22 \end{vmatrix}$

12. $\begin{vmatrix} 2 & 1 & 1 & 1 \\ 1 & 2 & 1 & 1 \\ 1 & 1 & 2 & 1 \\ 1 & 1 & 1 & 2 \end{vmatrix}$

Solve using Cramer's rule:

1. $\begin{aligned} x+ y + z &= 6 \\ 2x - y - z &= -3 \\ x - 3y + 2z &= 1 \end{aligned}$

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

3. $\begin{aligned} x - 2y + 3z &= 6 \\ 2x + y - z &= 4 \\ 3x - y + 2z &= -1 \end{aligned}$

4. $\begin{aligned} 3x + 2y - 5z &= 4 \\ -x + y - z &= 11 \\ 3x - y + 2z &= -1 \end{aligned}$