





W: www.vsajaipur.com | E: vsajaipur@gmail.com M.: +91 9460356652, 8058999828 Add.: 84, Krishna Vihar, Behind Narayan Niwas, Gopalpura Bypass, Jaipur - 302015

🚮 /vsajaipur | 💟 /vsajaipur | 🤛 /vidyashreeacademy | 📵 /vsa_jaipur

Class - 12th

Worksheet-16

Chapter-4

Subject Maths Determinant

Prove that

$$\begin{vmatrix} a+b+c & -c & -b \\ -c & a+b+c & -a \\ -b & -a & c+a+b \end{vmatrix} = 2(a+b)(b+c)(c+a).$$
1.
$$\begin{vmatrix} a-b-c & 2a & 2a \\ 2b & b-c-a & 2b \\ 2c & 2c & c-a-b \end{vmatrix} = (a+b+c)^3.$$
2.
$$\begin{vmatrix} y+z & x & y \\ z+x & z & x \\ x+y & y & z \end{vmatrix} = (x+y+z)(x-z)^2.$$
3.

$$\begin{vmatrix} a-b-c & 2a & 2a \\ 2b & b-c-a & 2b \\ 2c & 2c & c-a-b \end{vmatrix} = (a+b+c)^3.$$

$$\begin{vmatrix} y+z & x & y \\ z+x & z & x \\ x+y & y & z \end{vmatrix} = (x+y+z)(x-z)^2$$

3.
$$\begin{vmatrix} 1 & 1 & 1 \\ a & b & c \\ a^3 & b^3 & c^3 \end{vmatrix} = (b-c)(c-a)(a-b)(a+b+c).$$

4.
$$\begin{vmatrix} \frac{a^{2}+b^{2}}{c} & c & c \\ a & \frac{b^{2}+c^{2}}{a} & a \\ b & b & \frac{c^{2}+a^{2}}{b} \end{vmatrix} = 4abc$$
5.
$$\begin{vmatrix} a & a+b & a+2b \\ a+2b & a & a+b \\ a+b & a+2b & a \end{vmatrix} = 9(a+b)b^{2}$$
6.
$$\begin{vmatrix} x+4 & 2x & 2x \\ 2x & x+4 & 2x \\ 2x & 2x & x+4 \end{vmatrix} = (5x+4)(x-4)^{2}$$
7.

$$\begin{vmatrix} a & a+b & a+2b \\ a+2b & a & a+b \\ a+b & a+2b & a \end{vmatrix} = 9(a+b)b^2$$

6.
$$\begin{vmatrix} x+4 & 2x & 2x \\ 2x & x+4 & 2x \\ 2x & 2x & x+4 \end{vmatrix} = (5x+4)(x-4)^2$$