$$\begin{vmatrix} 11-x & -6 & 2 \\ -6 & 10-x & -4 \\ 2 & -4 & 6-x \end{vmatrix} = 0$$

is 6,and find the other two roots.
is 6,and find the other two roots.

17. If nεN, show that (b-c)(c-a)(a-b) is a factor of

$$\begin{vmatrix} 1 & 1 & 1 \\ a & b & c \\ a^{n+2} & b^{n+2} & c^{n+2} \end{vmatrix}$$

18.If, $\alpha+\beta+\gamma$=2s, prove

$$\begin{vmatrix} 1 & \cos\gamma & \cos\beta \\ \cos\gamma & 1 & \cos\alpha \\ \cos\beta & \cos\alpha & 1 \end{vmatrix} = 4\sin s\sin(s-\alpha)\sin(s-\beta)\sin(s-\gamma)$$

19.Show that

$$\begin{vmatrix} 1 & \cos x-\sin x & \cos x+\sin x \\ 1 & \cos y-\sin y & \cos y+\sin y \\ 1 & \cos z-\sin z & \cos z+\sin z \end{vmatrix} = 2\begin{vmatrix} 1 & \cos x & \sin x \\ 1 & \cos y & \sin y \\ 1 & \cos z & \sin z \end{vmatrix}$$

20.Evaluate the following determinants:

a) $\begin{vmatrix} 0 & 0 & 1 & 2 & 3 \\ 0 & 0 & 4 & 5 & 6 \\ -1 & -4 & 0 & 7 & 8 \\ -2 & -5 & -7 & 0 & 9 \\ -3 & -6 & -8 & -9 & 0 \end{vmatrix}$

b) $\begin{vmatrix} 0 & 0 & a & b \\ 0 & 0 & c & d \\ -a & -c & 0 & 0 \\ -b & -d & 0 & 0 \end{vmatrix}$

(See Example 7 and 8.)

ANSWERS TO EVEN NUMBERED EXERCISES

2. a) $adf+2bce-ae^2-dc^2-fb$ b)-2

4. a)$(a^3-1)^2$, b)-575

8. 0

10. $(a-b)^2(2x-a-b)(a+b+2x)$