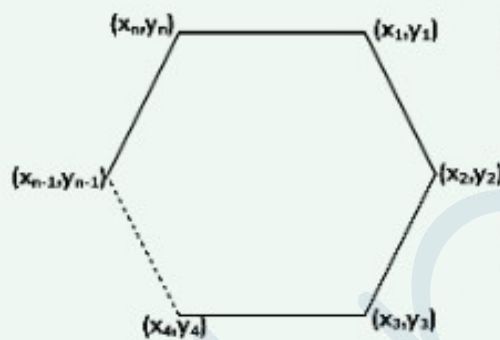


Area of Polygon ( $\Delta$ )

$$\Delta = \frac{1}{2} \begin{vmatrix} x_1 & y_1 \\ x_2 & y_2 \\ x_3 & y_3 \\ \vdots & \vdots \\ x_n & y_n \\ x_1 & y_1 \end{vmatrix} = \begin{cases} \left| \frac{1}{2} [(x_1 y_2 - y_1 x_2) + (x_2 y_3 - y_2 x_3) + \dots + (x_n y_1 - y_n x_1)] \right| \\ \frac{1}{2} [(x_1 y_2 + x_2 y_3 + \dots + x_n y_1) - (y_1 x_2 + y_2 x_3 + \dots + y_n x_1)] \end{cases}$$



If Points are taken anticlockwise

 $\Delta = +ve$ 

If Points are taken clockwise

 $\Delta = -ve$ Area of Triangle ( $\Delta$ )

$$\frac{1}{2} \begin{vmatrix} x_1 & y_1 & 1 \\ x_2 & y_2 & 1 \\ x_3 & y_3 & 1 \end{vmatrix}$$

 $\Delta =$ 

$$\begin{vmatrix} x_1 & y_1 \\ 1 & x_2 & y_2 \\ 2 & x_3 & y_3 \\ x_1 & y_1 \end{vmatrix}$$

$$\left| \frac{1}{2} [x_1 (y_2 - y_3) + x_2 (y_3 - y_1) + x_3 (y_1 - y_2)] \right|$$

