1. Polygons are classified into two:

1) Convex

2) Concave

Identifying concave polygons:

- Calculating cross products of successive pairs of edges.

  If we setup a vector for each edge then the adj edges can test for concavity. All such vectors will be of the same sign.

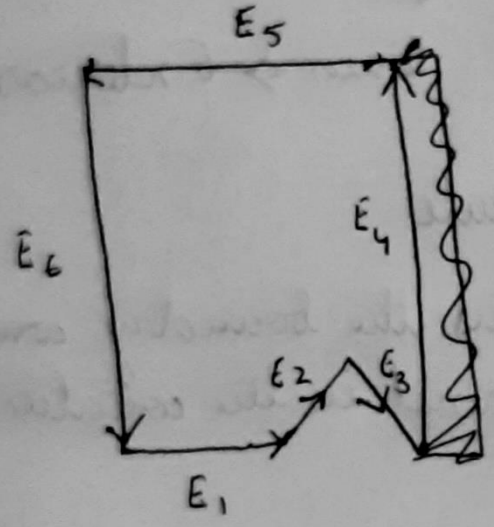
- Look at the polygon vertex positions relative to extension line of any edge.

  If some vertices are one side of the extension line and some vertices on the other side, the polygon is concave.

2. Two different methods are :

1) Vector method

If any cross product has any -ve z, we can specify it along the line of first edge vector in cross product.



E1 = (1,0,0) E2 = (1,1,0)

E3 = (1, -1, 0) E4 = (0,2,0)

E5 = (-3,0,0) E6 = (0, -2, 0)

2) Rotational method

- We rotate the polygon about the origin clockwise such that next vertex V_{K+1} is on x axis
- If V_{K+2} is below x axis, the polygon is concave
- We then split the polygon along x axis to form 2 polygons and perform concave test.

3. We use the following rules:

1) Odd - even rule

- Draw a line from any point 'P' to a distant point outside the co-ordinate entire
- Then count the no: of lines crossed.
- Odd => Interior
  Even => Exterior

2) Non zero winding rule

- Count the no: of times the boundry winds around a particular point in the counter clockwise
- add 1 for right to left
- subtract 1 for left to right
- If the result is non zero interior exterior if +ve or -ve.