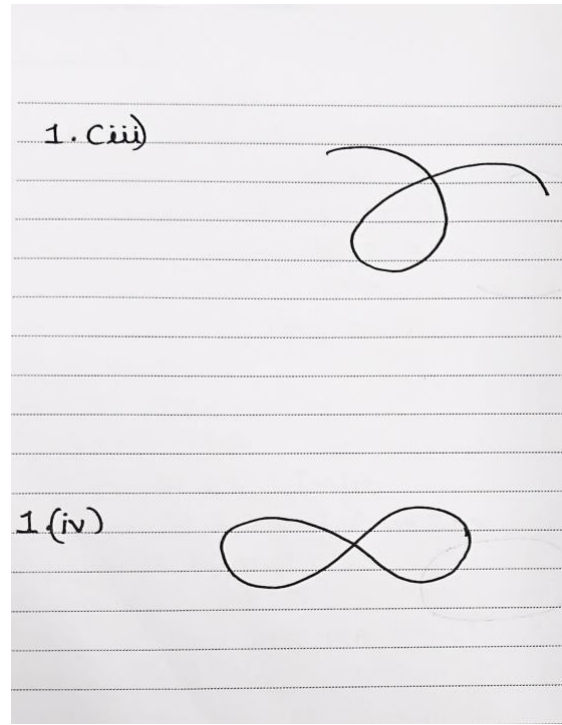
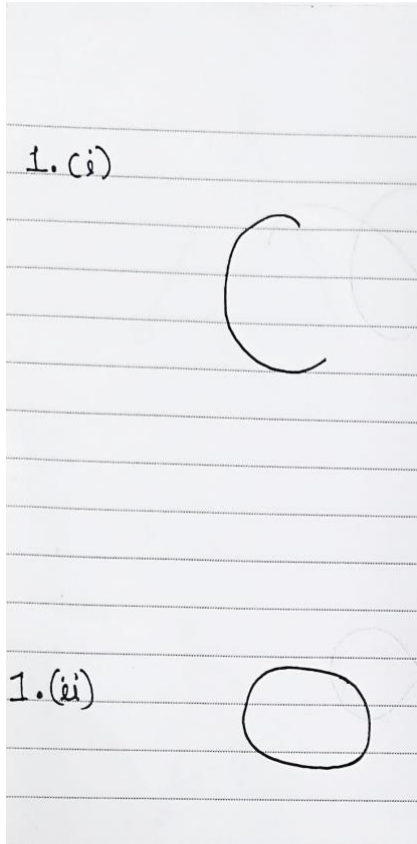


Exercise 10.3 - Basic Geometrical Concepts

1. Draw rough diagrams to illustrate the following:



(i) open simple curve: A simple line or arc that does not cross itself and does not close (e.g., a 'U' shape or 'S' shape).

(ii) closed simple curve: A continuous loop that encloses an area without crossing itself (e.g., a circle or triangle).

(iii) open curve that is not simple: A line or curve that crosses over itself but does not end where it started (e.g., a figure-8 with open ends).

(iv) closed curve that is not simple: A loop that crosses over itself (e.g., a complete figure-8 loop).

2. Consider the adjoining figure (a 4-pointed star shape) and answer the following questions:

(i) Is it a curve?

Answer: Yes, in geometry line segments forming a closed figure are also considered a curve.

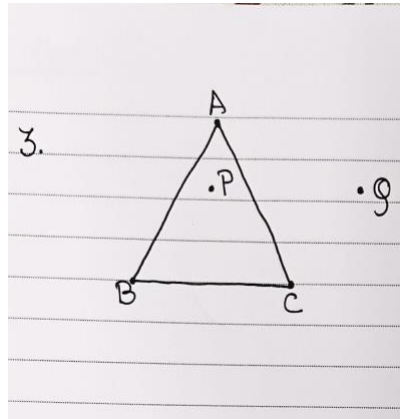
(ii) Is it a closed curve?

Answer: Yes, it forms a completely enclosed region.

(iii) Is it a polygon?

Answer: Yes, it is a closed figure made entirely of line segments.

3. Draw a rough sketch of a triangle ABC. Mark a point P in its interior and a point Q in its exterior. Is the point A in its exterior or in its interior?



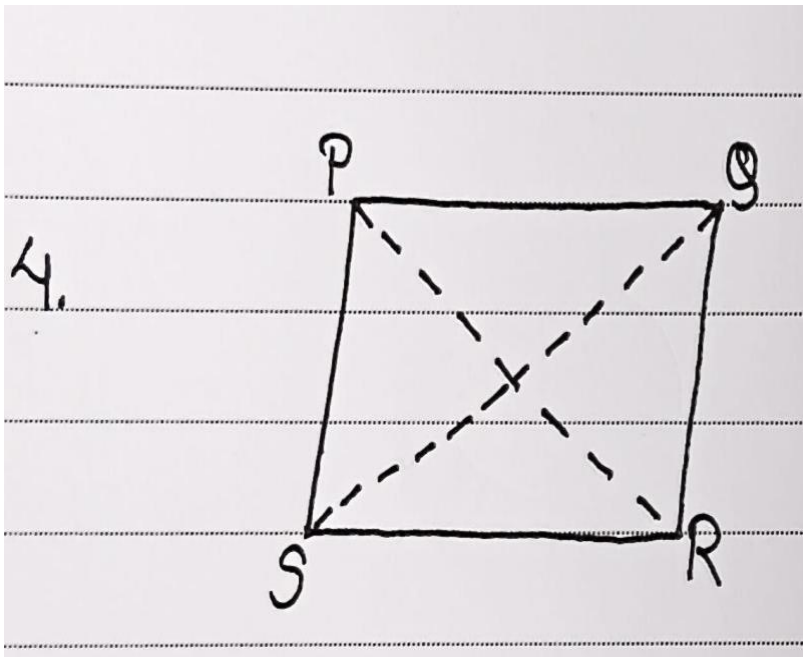
Answer:

- Point P lies inside triangle ABC (Interior).
- Point Q lies outside triangle ABC (Exterior).
- Point A is a vertex of triangle ABC, so it lies ON the triangle (it is neither in its interior nor in its exterior).

4. Draw a rough sketch of a quadrilateral PQRS. Draw its diagonals. Name them.

Answer:

- Opposite vertices are connected to form the diagonals.



- The two diagonals are Line Segment PR and Line Segment QS (or PR and QS).

5. In context of the given figure (Concave Quadrilateral ABCD):

- (i) Is it a simple closed curve?

Answer: Yes.

- (ii) Is it a quadrilateral?

Answer: Yes, it has 4 sides (AB, BC, CD, DA).

- (iii) Draw its diagonals and name them.

Answer: The diagonals are AC and BD.

- (iv) State which diagonal lies in the interior and which diagonal lies in the exterior of the quadrilateral.

Answer: Diagonal AC lies in the INTERIOR, and diagonal BD lies in the EXTERIOR of the quadrilateral.

6. Draw a rough sketch of a quadrilateral KLMN. State:

- (i) two pairs of opposite sides:

Answer: (a) KL and MN, (b) LM and KN

- (ii) two pairs of opposite angles:

Answer: (a) $\angle K$ and $\angle M$, (b) $\angle L$ and $\angle N$

- (iii) two pairs of adjacent sides:

Answer: (a) KL and LM, (b) LM and MN

- (iv) two pairs of adjacent angles:

Answer: (a) $\angle K$ and $\angle L$, (b) $\angle L$ and $\angle M$

