The usual topology for the complex plane \( \mathbb{C} \) is the topology induced by the metric
\[
d(x, y) := |x - y|
\]
for \( x, y \in \mathbb{C} \). Here, \(|\cdot|\) is the complex modulus.

If we identify \( \mathbb{R}^2 \) and \( \mathbb{C} \), it is clear that the above topology coincides with the Euclidean metric on \( \mathbb{R}^2 \).

Some basic topological concepts for \( \mathbb{C} \):

1. The open balls
\[
B_r(\zeta) = \{ z \in \mathbb{C} : |z - \zeta| < r \}
\]
are often called open disks.

2. A point \( \zeta \) is an accumulation point of a subset \( A \) of \( \mathbb{C} \), if any open disk \( B_r(\zeta) \) contains at least one point of \( A \) distinct from \( \zeta \).

3. A point \( \zeta \) is an interior point of the set \( A \), if there exists an open disk \( B_r(\zeta) \) which is contained in \( A \).

4. A set \( A \) is open, if each of its points is an interior point of \( A \).

5. A set \( A \) is closed, if all its accumulation points belong to \( A \).

6. A set \( A \) is bounded, if there is an open disk \( B_r(\zeta) \) containing \( A \).

7. A set \( A \) is compact, if it is closed and bounded.