Chapter 3

3.1

Problem

Show t hat a closed interval $[a, b]$ on the real line is a closed subset of $\mathbb{C}$, but that an open interval (a, b) is not an open subset of $\mathbb{C}$. Is it closed?

Solution

The open interval (a, b) is neither closed nor open.

3.2

Problem

Show that the set $A = z \in \mathbb{C} : 1 < |z| < 2$ is open. Describe its closure and its boundary.

Solution

It's the intersection of two open sets which is open. It's a ring bounded by 1 and 2.