Simple/Closed Paths

Definition 1. Let \( \gamma : [a, b] \to \mathbb{C} \) be a continuous function. We say that \( \gamma \) is **closed** if \( \gamma(a) = \gamma(b) \).

We say that \( \gamma \) is **simple** if the following implication holds:

\[
\gamma(t_1) = \gamma(t_2) \quad \text{for some} \quad t_1, t_2 \in [a, b] \quad \implies \quad t_1 = t_2 \quad \text{or} \quad \{t_1, t_2\} = \{a, b\}.
\]