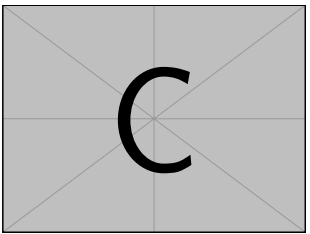
Geometry



Curves

Definition (Curve)

A smooth curve is a function $\gamma : [a, b] \to \mathbb{R}^n$ such at all derivatives $\gamma, \gamma', \gamma'', \ldots$ exist.

Definition

The length of a curve $\gamma : [a, b] \to \mathbb{R}^n$ is defined as

$$L(\gamma) = \int_a^b \|\gamma'(t)\| dt.$$

Definition

A curve $\gamma : [a, b] \to \mathbb{R}^n$ is said to be parametrized by arc length if $\|\gamma'(t)\| = 1$ for all $t \in [a, b]$.

Definition (Regular Curve)

A curve $\gamma : [a, b] \to \mathbb{R}^n$ is regular if $\gamma'(t) \neq 0$ for all $t \in [a, b]$.

Theorem

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