Info

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Unit speed *parameterization* of a curve

Definition. Unit speed parameterization of a curve

An **unit speed parameterization** of a curve $\gamma : [0, L] \to \mathbb{R}^n$ is such that

$$\|\gamma'\|(t) = 1, \ \forall t \in [0, L]$$

An unit speed parameterization for a curve, if it exists, is **unique** upto a reparameterization of

$$\theta(t) = \pm t + t_0$$

for some $t_0 \in \mathbb{R}$.

Given a *regular* curve, at least one unit speed reparameterization $\gamma \circ \theta$ **exists** which follows

$$\theta \circ \mathfrak{L}[\gamma] = \mathsf{Id} = \mathfrak{L}[\gamma] \circ \theta$$

where $\mathfrak{L}$ is the arc length function.

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And it has 6 siblings.

- stem
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