

1. Let $f : [0, 1] \rightarrow \mathbb{R}^n$ be C^∞ for $n \geq 2$. Prove that if $f'(x) \neq 0$ then $f([0, 1])$ has volume 0.

Proof. lakdsjfa;df □

2. Let $f : [0, 1]^n \rightarrow \mathbb{R}^m$ for $n < m$. Prove that if f is lipshitz then $f([0, 1]^n)$ has volume 0 in \mathbb{R}^m .

Proof. lakdsjfa;df □

3. Prove that if $f : [0, 1] \rightarrow \mathbb{R}^2$ is just continuous then you can have $\text{vol}(f[0, 1])$ is not 0. These are called space filling curves.

Proof. lakdsjfa;df □