1. Let $f : [0,1] \to \mathbb{R}^n$ 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 $f : [0,1]^n \to \mathbb{R}^m$ 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 $f : [0,1] \to \mathbb{R}^2$ is just continuous then you can have $vol(f[0,1])$ is not 0. These are called space filling curves.

   Proof. lakdsjfa;df □