

Math 17A

Kouba

Mean Value Theorem-- An Application

Let $s(t)$ be the total number of miles that you have driven on Interstate 80 from Davis to San Francisco after t hours of driving. Assume that $s(1/3)=10$ miles and $s(1.2)=82$ miles. At a checkpoint along the way you proudly admit these mathematical facts to a busy highway patrol officer, who, while a student at UC Davis, took a Math 17A course. The officer makes a few quick calculations, smiles, mumbles something about the Mean Value Theorem, then politely writes you a traffic ticket. Explain why. (You may assume that the distance function $s(t)$ is a differentiable one.)