

Advanced Calculus - HW 1

This first homework assignment is due next Tuesday, January 23. You should type it up in LaTeX, print the result and turn it in to me in class.

The problem: Prove the dot product rule. More specifically, suppose that \mathbf{u} and \mathbf{v} map $\mathbb{R} \rightarrow \mathbb{R}^3$. Write down a componentwise proof that

$$\frac{d}{dt} \mathbf{u} \cdot \mathbf{v} = \mathbf{u}' \cdot \mathbf{v} + \mathbf{u} \cdot \mathbf{v}'.$$