

Solution Manual to Ravi Vakil's FOAG

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Exercise 3.1. *IMPORTANT EXERCISE FOR THOSE WITH A LITTLE EXPERIENCE WITH MANIFOLDS.* Suppose that $\pi : X \rightarrow Y$ is a continuous map of differentiable manifolds (as topological spaces not a priori differentiable). Show that π is differentiable if differentiable functions pull back to differentiable functions, i.e., if pullback by π^* gives a map $\mathcal{O}_Y \rightarrow \pi_*\mathcal{O}_X$. (Hint: check this on small patches. Once you figure out what you're trying to show you will find that the result is immediate.)

Proof. aaa

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