Exercises

16.55 [1H1] In the same hypotheses of the exercise [1GZ], we also assume that $f \in C^1(A)$.

- We decompose $y = (y', y_n), \in \mathbb{R}^n$ as we did for x. We define the function $G : V \to \mathbb{R}^n$ as $G(y) = (y', \tilde{g}(y))$. Let $W = G(V)$ be the image of V, show that $W \subseteq U$ and that W is open.
- Show that is $G : V \to W$ is a diffeomorphism; and that its inverse is the map $F(x) = (x', f(x))$.
- Let's define $\tilde{f} = f \circ G$. Show that $\tilde{f}(x) = x_n$.

(This exercise will be used, together with [1GB], to address constrained problems, in Section [2D5]).

Solution 1. [1H2]