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# Analysis II — Quiz 5

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**Q5.1.** Show that if for $f : U \longrightarrow \mathbb{R}^m$, $U \subseteq \mathbb{R}^n$ open, there is a continuous function $T : U \times U \longrightarrow \mathcal{L}(\mathbb{R}^n, \mathbb{R}^m)$ with $f(x) - f(y) = T_{x,y}(x - y)$ for all $x, y \in U$, then $f \in C^1(U)$.