Exercises

E17.10 [1CP]Difficulty:*. Describe a function $f : \mathbb{R} \to \mathbb{R}$ that is differentiable and such that the image of $[0, 1]$ using f' is $f'([0, 1]) = (-1, 1)$.

Before looking for the example, ponder on this notions. We remember the Darboux property [1C8]: the image $f'(I)$ of an interval I is an interval; but this does not say that the image of $f'([0, 1])$ should be a closed and bounded interval. If, however, we also knew that f' is continuous, what could we say of $f'([0, 1])$? So what do you deduce *a priori* about the sought example?

Solution 1. [1CQ]