

Exercises

E14.44 [18W] Prerequisites: [18T].

Let $J \subset \mathbb{R}$ be an open nonempty interval, and $f : J \rightarrow \mathbb{R}$ be a twice differentiable and convex function. Show that the following facts are equivalent:

1. f is strictly convex,
2. the set $\{x \in J : f''(x) = 0\}$ has an empty interior,
3. f' is monotonic strictly increasing.

Solution 1. [18X]