

MATH 322 - assignment #3 - additional problem

Let $f : [a, b] \rightarrow \mathbb{R}$ be a continuous function such that f is differentiable (at least) in the open interval (a, b) and $f'(x) \geq 0$ for $x \in (a, b)$.

1. Show that if there exists a point $c \in (a, b)$ such that $f'(c) > 0$, then $f(b) > f(a)$.

2. Deduce that the following property implies f being *strictly* increasing:

For every open interval $I \subset (a, b)$ there exists $c = c_I \in I$ such that $f'(c_I) > 0$.