1. Section 4.1: exercises 11, 12, 13 and 14.

2. Section 4.2: exercises 15 and 16.


4. A function $f$ defined on an interval $I \subseteq \mathbb{R}$ is said to be convex on $I$ if and only if

$$f(\lambda x_1 + (1 - \lambda)x_2) \leq \lambda f(x_1) + (1 - \lambda)f(x_2)$$

whenever $x_1, x_2 \in I$ and $\lambda \in (0, 1)$. Prove that if $f$ is convex on an open interval, then it is continuous there. Must a convex function on an arbitrary interval be continuous?