1 Differentiable Functions

Definition 1.1 A function $f\colon \mathbb{R} \to \mathbb{R}$ is called **differentiable** at $x \in \mathbb{R}$, iff for all $\epsilon > 0$ there is a $\delta > 0$, such that $\frac{|f(x)-f(y)|}{|x-y|} < \epsilon$ for all $|x - y| < \delta$.