



## SECOND DERIVATIVES

### Definition

Let  $A \subset \mathbf{R}$  open. Let  $f : A \rightarrow \mathbf{R}$  be differentiable with derivative  $f' : \mathbf{R} \rightarrow \mathbf{R}$ . We call  $f$  *twice differentiable* (or *two times differentiable*) if its derivative  $f'$  is differentiable. In this case, we call the derivative of  $f'$  the *second derivative* of  $f$ .

### Notation

Let  $A \subset \mathbf{R}$ . The second derivative of the twice-differentiable function  $f : A \rightarrow \mathbf{R}$  is sometimes denoted  $f''(x) : A \rightarrow \mathbf{R}$



