



**Definition**

The *sign function* (or *signum function*)  $\operatorname{sgn} : \mathbf{R} \rightarrow \mathbf{R}$  is the real-valued function on  $\mathbf{R}$  defined by

$$\operatorname{sgn}(x) = \begin{cases} -1 & \text{if } x < 0 \\ 0 & \text{if } x = 0 \\ 1 & \text{if } x > 0 \end{cases}$$

The Latin word *signum* means “sign.”



