

78. $f(x) = s \sin \frac{1}{x}$ is defined for all $x \neq 0$; its domain is $(-\infty, 0) \cup (0, \infty)$. Since $|\sin t| \leq 1$ for all t , we have $|f(x)| \leq |x|$ and $-|x| \leq f(x) \leq |x|$ for all $x \neq 0$. Since $\lim_{x \rightarrow 0} (-|x|) = 0 = \lim_{x \rightarrow 0} |x|$, we have $\lim_{x \rightarrow 0} f(x) = 0$ by the squeeze theorem.