

27. $\lim_{x \rightarrow 0} x \sin \frac{1}{x} = 0$ by the squeeze theorem, since

$$-|x| \leq x \sin \frac{1}{x} \leq |x| \quad \text{for all } x \neq 0$$

and $\lim_{x \rightarrow 0} (-|x|) = \lim_{x \rightarrow 0} |x| = 0$.