

39.

$$f(x) = 1/x$$

$$\begin{aligned}\lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h} &= \lim_{h \rightarrow 0} \frac{\frac{1}{x+h} - \frac{1}{x}}{h} \\ &= \lim_{h \rightarrow 0} \frac{x - (x+h)}{h(x+h)x} \\ &= \lim_{h \rightarrow 0} -\frac{1}{(x+h)x} = -\frac{1}{x^2}\end{aligned}$$