

40.

$$f(x) = 1/x^2$$

$$\begin{aligned}\lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h} &= \lim_{h \rightarrow 0} \frac{\frac{1}{(x+h)^2} - \frac{1}{x^2}}{h} \\&= \lim_{h \rightarrow 0} \frac{x^2 - (x^2 + 2xh + h^2)}{h(x+h)^2 x^2} \\&= \lim_{h \rightarrow 0} -\frac{2x+h}{(x+h)^2 x^2} = -\frac{2x}{x^4} = -\frac{2}{x^3}\end{aligned}$$