

$$\begin{aligned}
 \left(\frac{f}{g}\right)'(x) &= \lim_{h \rightarrow 0} \left(\frac{1}{g(x+h)g(x)} \right) \left[\frac{f(x+h) - f(x)}{h} g(x) \right. \\
 &\quad \left. - \frac{g(x+h) - g(x)}{h} f(x) \right] \\
 &= \frac{f'(x)g(x) - f(x)g'(x)}{g^2(x)}
 \end{aligned}$$