

(3)

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