

$$\begin{aligned}(1) \quad \lim_{x \rightarrow 0} (1 + 2x)^{\frac{1}{x}} &= \lim_{x \rightarrow 0} (1 + 2x)^{\frac{2}{2x}} \\ &= \lim_{x \rightarrow 0} \left\{ (1 + 2x)^{\frac{1}{2x}} \right\}^2 \\ &= e^2\end{aligned}$$