

$$\begin{aligned}
 \textcircled{1} \quad & \lim_{x \rightarrow -9} \frac{x^2 - 81}{3x + 27} \\
 &= \lim_{x \rightarrow -9} \frac{(x+9)(x-9)}{3(x+9)} \\
 &= \lim_{x \rightarrow -9} \frac{x-9}{3} \\
 &= \frac{-18}{3} \\
 &= -6
 \end{aligned}$$

$$\begin{aligned}
 \textcircled{2} \quad m_{\tan} &= \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h} \\
 &= \lim_{h \rightarrow 0} \frac{8(x+h)^2 - 3(x+h) - [8x^2 - 3x]}{h} \\
 &= \lim_{h \rightarrow 0} \frac{8(x^2 + 2xh + h^2) - 3x - 3h - 8x^2 + 3x}{h} \\
 &= \lim_{h \rightarrow 0} \frac{\cancel{8x^2} + 16xh + 8h^2 - 3h - \cancel{8x^2}}{h}
 \end{aligned}$$

$$= \lim_{h \rightarrow 0} \frac{h(16x + 8h - 3)}{h}$$

$$= \lim_{h \rightarrow 0} 16x + 8h - 3$$

$$= 16x - 3$$