1. Let \( f(x) = \begin{cases} x^2 & \text{if } x \neq 3 \\ 0 & \text{if } x = 3 \end{cases} \)

(a) Evaluate \( \lim_{x \to 3} f(x) \).

(b) Does \( \lim_{x \to 3} f(x) = f(3) \)?

2. Let \( g(x) = x^2 \). Use the limit definition of derivative to show that \( g'(x) = 2x \).

3. Let \( f \) be a function defined near and at \( x = a \). If the function \( f \) has derivative at the point \( x = a \) do you think that \( f \) is continuous at the point \( x = a \)? Explain your answer.