11. Let \( g(x) = x^2 \). Use the limit definition of derivative to explain why \( g'(x) = 2x \).

12. Use the summation formulas

\[
\sum_{k=0}^{n-1} 1 = n, \quad \sum_{k=0}^{n-1} k = \frac{n(n - 1)}{2}, \quad \sum_{k=0}^{n-1} k^2 = \frac{n(2n - 1)(n - 1)}{6}
\]

and the definition of the definite integral as a limit of sums of approximating rectangles to explain why

\[
\int_0^t x \, dx = \frac{t^2}{2}.
\]