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

12. Use the summation formulas

$$\sum_{k=0}^{n-1} 1 = n, \qquad \sum_{k=0}^{n-1} k = \frac{n(n-1)}{2}, \qquad \sum_{k=0}^{n-1} k^2 = \frac{n(2n-1)(n-1)}{6}$$

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

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