Justify your answers to the following questions.

Question 1. [4 marks] Find the exact area of the region that lies under the graph of \( f(x) = x \) between \( x = 0 \) and \( x = 2 \) using the Riemann sum, taking the sample points to be right endpoints. (No need to graph the function and the area region.)

Question 2. [3 marks] Find the derivative of \( \int_{1}^{x^2} \sqrt{1 + t^2} \, dt \) with respect to \( x \).