(1) Let \( y = f(x) \) be a differentiable function with \( f(0) = 0 \) such that its length between \( x = 0 \) and \( x = a \) is given by \( L = \sqrt{2a} \) for all \( a > 0 \). Determine all functions \( f \) with this property.

(2) A 1 m wire is used to make a square and an equilateral triangle. Find the minimal and maximal possible areas.

(3) Find \( f(4) \) if \( \int_0^4 f(x) \, dx = x \cos \pi x \).

(4) The graph \( y = \sqrt{x} \) and the lines \( x = \frac{1}{2}, \ y = 0, \) and \( y = 1 \) cut out two regions, which are rotated about \( x = \frac{1}{2} \) to generate a solid. Compute its volume.

(5) Compute \( \int \sqrt{\frac{x-1}{x^2}} \, dx \).