3. (35 points) The graph of \( f(x) \) on \([0,4]\) is shown below. You may want to refer to it to answer the following questions.

a. What is \( \int_{0}^{4} x f'(x) \, dx \) ?

b. What is \( \int_{0}^{2} x f'(x^2) \, dx \) ?