(5.) (5 points) Let \( f(x) = \frac{1}{x} \). Use the limit definition of the derivative (and some algebra) to compute \( f'(x) \). [Show all work.]

(6.) (8 points)

(a) Given \( F(x) = x \ln(x) - x + C \), show that \( F'(x) = \ln(x) \). [Show all your work.]

(b) If \( F(1) = 3 \), find \( C \).

(c) Evaluate \( \int_{1}^{3} \ln(x) \, dx \). [Give and exact answer, not an approximation.]