1. (3ea) Determine (and simplify) the derivative of each function below.

(a) \( f(x) = \ln(3x^2 + 5x) \)

(b) \( y = \frac{\ln(x)}{x} \)

(c) \( g(x) = \log_4(x^2 - 3) \)
2. (3,5) A company finds that their cost (in dollars) to produce $x$ items is given by the function

$$C(x) = \frac{200x \ln x}{3x + 1}.$$ 

(a) What is the company’s average cost to produce 15 items?

(b) What is the company’s marginal cost when producing 15 items?
3. (4) Consider the function \( f(x) = x^2 \log_6(4x) \). What is the slope of the line which is tangent to the graph of \( y = f(x) \) when \( x = 7 \)? (Round to 2 decimal places)