5. [10 points] Electric cars need large amounts of energy to operate. Most types of batteries, including those found in electric cars, have reduced capacities when discharged at higher rates. For the lithium-ion batteries used in the newest electric cars, this relationship can be expressed by the equation \( C = f(I) = \frac{K}{I^n} \) where \( C \) is the working capacity of the battery in amp hours (Ah) given a discharge rate of \( I \) (with \( n > 1 \)) measured in amps (A). The constant \( K > 0 \) is the rated capacity of the battery.

a. [5 points] Write a formula for the derivative of \( C \) at \( I = 3 \) using the limit definition of the derivative. You do not need to evaluate or simplify this expression.

b. [3 points] Is \( C \) increasing or decreasing at \( I = 3 \)? Justify your answer.

c. [2 points] What is the concavity of the graph of \( C \) at \( I = 3 \)? Justify your answer.