1. Write a DE that models the situation: "The acceleration \( \frac{dv}{dt} \) of a Lamborghini is proportional to the difference between 250 km/h and the velocity of the car."

\[ \frac{dv}{dt} = k \left( 250 - v \right) \; ; \; \; v(0) = 0 \; ; \; \; v(t) = \ln(v + C) \]

a) First verify that \( v(t) \) satisfies the DE.

b) Then determine the value of the constant \( C \) so that \( v(t) \) satisfies the given initial conditions.