1. (1 points) If $w = 100e^{-0.3t}$, then

$$\frac{dw}{dt} =$$

2. (1 points) If $y$ is a function of $t$ for which $\frac{dy}{dt} = 60e^{3t}$, then find one possible formula for $y$ in terms of $t$.

3. (2 points) Evaluate the following indefinite integral.

$$\int \frac{1}{t^2} \, dt$$
4. (6 points) Find explicit solutions to the following initial value problems.

(a) \( \frac{dq}{dt} = -0.4q, \quad q(0) = 30 \)

(b) \( \frac{dw}{dz} = 0.6z, \quad w(0) = 40 \)

(c) \( \frac{dy}{dx} = \frac{2x - 5}{3y^2}, \quad y(0) = 2 \)