

4. Suppose k is a constant, and the solution to $\frac{dy}{dx} = ky$, $y(0) = 1$ satisfies $y(1) = 3$. Give the value of k .
5. A metal ball with initial temperature of $30^\circ C$ is dropped into a large tank filled with water that is kept at the constant temperature of $90^\circ C$. If the temperature of the ball increases $2^\circ C$ in the first minute, give the temperature of the ball 30 minutes later.

Do not include the units in your answer.