

1. Solve the initial value problem:

$$t \frac{dy}{dt} + 2y = 4t^2 - 3t + 2; \quad y(1) = 3.$$

2. A tank has pure water flowing into it at a rate of 50 L/min. The contents of the tank are thoroughly mixed, and the contents flow out at 50 L/min. Salt is added to the tank at a rate of 10 kg/min. Initially, the tank contains 200 kg of salt in 100 L of water. How much salt is in the tank after 30 minutes?