1. Find the solution to the following differential equation

$$\frac{dy}{dx} = \frac{x\sin(x^2)}{y}, \qquad y(0) = -2.$$

Hint: $t^2 = c$ *implies* $t = \pm\sqrt{c}$.

2. A tank initially contains 1000 L of pure water. Brine that contains 0.07 kg of salt per liter of water enters the tank at a rate of 5 L/min. In addition, brine that contains 0.04 kg of salt per liter of water enters the tank at a rate of 10 L/min. The solution is kept thoroughly mixed and drains from the tank at a rate of 15 L/min. Find the amount of salt (in kg) in the tank as a function of time t in minutes.