Instructions. Show all work, with clear logical steps. No work or hard-to-follow work will lose points.

Problem 1. (5 points) Find a general solution to the given differential equation.

$$9x^2y' = y' + 9xe^{-y}$$

Problem 2. (4 points) A 1000-liter tank initially contains 750 liters of brine containing 50 kilograms of dissolved salt. Brine containing 6 kilograms of salt per liter flows into the tank at the rate of 5 liters per minute, and the well-stirred mixture flows out of the tank a rate of 3 liters per minute. **Draw a picture that illustrates this scenario and set up a differential equation for the amount of salt in the tank at time t.**

Problem 3. (1 point) How is the course going? What could be better? What's going well?