

MATH 361 Quiz 3**Name:**

Show all work. 5 points each.

1. A tank contains 200 liters of fluid in which 30 grams of salt is dissolved. Brine containing 1 gram of salt per liter is then pumped into the tank at a rate of 4L/min; the well mixed solution is pumped out at the same rate. Set up the linear initial value problem for finding the number $A(t)$ of grams of salt in the tank at time t .

2. Two chemicals A and B are combined to form a chemical C. The rate, or velocity, of the reaction is proportional to the product of the instantaneous amounts of A and B not converted to chemical C. Initially, there are 40 grams of A and 50 grams of B, and for each gram of B, 2 grams of A is used. It is observed that 10 grams of C is formed in 5 minutes. Set up the differential equation that models the chemical reaction.