Chapter 1.5

Linear Algebra with applications to differential equations

College of the Atlantic. Winter 2019

1. (Re)introduce yourself to others in your group. Briefly share with your group-mates what your favorite breakfast food(s) are.

2. Initially a tank contains 10000 litres of brine with a salt concentration of 1 kg salt per 100 litres. Brine with 2 kg salt per 100 litres enters the tank at a rate of 20 litres per second. The well-stirred mixture leaves at the same rate. Find the amount of salt in the tank as a function of time.

3. Repeat the above problem, but now assume that the brine leaves the tank at a rate of 10 liters per second. Find an expression for the amount of salt in the tank as a function of time.

Problems taken from `http://www.math.ubc.ca/~israel/m215/mixing/`