

Math 2080: Differential Equations

Worksheet 2.6: Basic mixing problems

NAME:

1. Write down (but do not solve!) an initial value problem for the following two mixing problems.
 - (a) A tank contains 100 gallons of water, in which 20 oz of salt is dissolved. Water with a concentration of 3 oz/gal flows into the tank at a rate of 5 gal/min, and water drains from the tank at the same rate.
 - (b) A tank contains 100 gallons of water, in which 20 oz of salt is dissolved. Pure water flows into the tank at a rate of 5 gal/min, and water drains from the tank at the same rate.

- Using only your physical intuition, find a simple particular solution to each of the mixing problems in the previous problems. You should be able to do both of these in your head.

- Solve the two initial value problems on the previous page.