MA 214 Calculus IV (Spring 2016)

Section 2

Homework Assignment 2

1. Boyce and DiPrima, p. 60, Problem 2.
2. A tank initially contain 60 gal of pure water. Brine containing 1 lb of salt per gallon enters the tank at 2 gal/min, and the (perfectly mixed) solution leaves the tank at 3 gal/min; thus thetank is empty after exactly 1 hour.
   (a) Find the amount of salt in the tank after t minutes.
   (b) What is the maximum amount of salt ever in the tank?
3. A 100-gallon mixing vat is initially full of pure water. One gallon per minute of salt solution with 1 pound of salt dissolved in each gallon of water flows into the tank, 1 gallon per minute of mixed solution flows out, and 1 gallon of water per minute evaporates from the vat. Estimate the amount of salt in the vat when it is half empty.
4. Boyce and DiPrima, p. 61, Problem 10.
5. Boyce and DiPrima, p. 62, Problem 12.
6. Boyce and DiPrima, p. 63, Problem 16.
7. Boyce and DiPrima, p. 64, Problem 19 (a), (b).
8. Boyce and DiPrima, p. 65, Problem 25 (a).