

MA 16020 LESSON 20: DIFFERENTIAL EQUATIONS – SEPARATION OF VARIABLES (PROBLEM SET)

Example 2: In a particular chemical reaction, a substance is converted into a second substance at a rate proportional to the square of the amount of the first substance present at any time, t . Initially, 50 grams of the first substance was present, and 1 hour later only 14 grams of the first substance remained. What is the amount of the first substance remaining after 7 hours?

Example 3: A 800 gallon tank initially contains 700 gallons of brine containing 75 pounds of dissolved salt. Brine containing 4 pounds of salt per gallon flows into the tank at the rate of 4 gallons per minute, and the well-stirred mixture flows out of the tank at the rate of 1 gallon per minute. Set up a differential equation for the amount of salt, $A(t)$, in the tank at time t .

