

**Dartmouth College**  
Mathematics 23 - Assn2

1. Consider the differential equation  $y' = y^3$ .
  - (a) Find *all* solutions of this differential equation.
  - (b) Find the particular solution satisfying  $y(0) = 0$ .
  - (c) Find the particular solution satisfying  $y(0) = 1$ . What is the largest interval on which this solution is defined?
  
2. (Lebl: 1.3.) Solve  $\frac{dy}{dx} = xy + x + y + 1$ . (Hint: Factor the right hand side.)
  
3. (Lebl 1.39) Solve  $y' = xe^{-y}$ ,  $y(0) = 1$
  
4. Boyce and DiPrima: p. 17: 15
  
5. Boyce and DiPrima: p. 75: 1 (explain)
  
6. Boyce and DiPrima: p. 76: 22(a,b).