## MA/PHY506 Fall 2015 Problem Set 1 DUE: 4 September 2015

- 1. First order ODE: Arken, Chapter 7, pages 339–342, problems 7.2.2, 7.2.3, 7.2.5, 7.2.12.
- 2. Second order ODE: Arken, Chapter 7, pages 343, problems 7.3.1 and 7.3.4.

Here are the problems in case you have different editions:

- 1. 7.2.2:  $(s^{2}+1)f'(s) + sf(s) = 0$ 2. 7.2.3:  $\frac{dN}{dt} = -kN^{2}, \quad N(t=0) = N_{0}$ 3. 7.2.5  $mv' = -\kappa v^{n}, \quad n \in N$
- 4. 7.2.12:

$$mv' = mg - bv, \quad v(t=0) = 0$$

5. 7.3.1. Find the biggest set of independent solutions to

$$y''' - 2y'' - y' + 2y = 0$$

6. 7.3.4. Find the biggest set of independent solutions to

$$y'' + 2y' + 2y = 0$$