

Math 130A – Prof. Rabin – Homework #0 – due October 4, 2007

These problems will help you review some concepts from Math 20D and 20F. They will not be graded, but you should be prepared to discuss them at the first section meeting.

(1) Solve by separation of variables: $dy/dx = y^2e^{3x}$.

(2) Solve by finding an integrating factor: $y' + (y/x) = x^2 + 1$.

(3) Find the general solution: $y'' - 12y' + 35y = 0$.

(4) Find the particular solution satisfying the initial conditions $y(0) = 1, y'(0) = 0$:

$$y'' - 3y' + 2y = 2 \sin x.$$

(5) Find the eigenvalues and eigenvectors of the matrix

$$\begin{bmatrix} 1 & 2 \\ 3 & 2 \end{bmatrix}.$$