# Math 583 B
# Homework Assignment # 3

Due February 11, 1999

## Integral equations

Consider the integral equation

$$y(x) = \lambda \int_0^1 (1 - 3x\xi)\ y(\xi)\ d\xi + F(x).$$

1. Find the eigenvalues.
2. For the homogeneous case, find the eigenfunctions.
3. If $F$ is not identically 0, find the solution when $\lambda$ is not an eigenvalue.
4. If $F$ is not identically 0 but $\lambda$ is an eigenvalue, find conditions on $F$ such that a solution exists. Then find the solutions.