

# Math 205, Differential Equations

## Quiz 4

1. Use reduction of order to find a second solution.

$$xy'' + y' = 0; \quad y_1 = \ln x$$

2. Determine whether the given set of functions is linearly independent. Do **not** use the Wronskian. Prove your answer.

- a.  $f_1(x) = 1 + x$ ,  $f_2(x) = x$ ,  $f_3(x) = x^2$   
b.  $f_1(x) = x$ ,  $f_2(x) = x^2$ ,  $f_3(x) = 4x - 3x^2$

3. Find the general solution of

a.  $y^{(4)} - 2y'' + y = 0$

b.  $y''' + 4y'' - 5y' = 0$