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## Math 221 Quiz 5

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Name: \_\_\_\_\_

Score: \_\_\_\_\_

**Instructions:** You must show supporting work to receive full and partial credits. No text book, notes, formula sheets allowed.

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1(5pts) (a) Verify that  $y_p(t) = -t^2$  is a particular solution to the nonhomogeneous equation  $ty'' - (t + 1)y' + y = t^2$ .

(b) Find a general solution to the equation if it is given that  $y_1(t) = e^t, y_2(t) = (t + 1)$  are two linearly independent solutions to the homogeneous equation.

2(5pts) (a) Find the general solution to the homogeneous equation  $2y'' + y' = 0$ .

(b) Find the solution that satisfies the initial conditions:  $y(0) = 3, y'(0) = 0$ .