This quiz covers: Chapter 3.4 and 3.5 **DUE: Friday 3/30** at beginning of class.

Directions: Complete all questions and **show all applicable work.** Partial credit will be given. Please feel free to consult your text, notes and the online direction field solver as you see fit. Please do not discuss with other people (except the professor) or use the internet at large (including Wolfram Alpha). Each part is worth 4 points.

1.) (Chapter 3.4) Find the solution to the following differential equation and initial condition

$$y'' - 6y' + 9y = 0$$

where $y(0) = 0$ and $y'(0) = 2$.

2.) (Chapter 3.4) Find the general solution to the following differential equation and initial condition

$$t^2y'' - 4ty' + 6y = 0$$

where $t > 0$ and a known solution is $y_1(t) = t^2$.

3.) (Chapter 3.5) Find the general solution to the following differential equation and initial condition

$$y'' - 6y' + 9y = e^t + t^2 - 1.$$

Note that this require two particular solutions (exponential and polynomial), but notice since they are added, you can first find one for e^t and then another for $t^2 - 1$. Your end solution will look like $y = c_1y_1 + c_2y_2 + y_3 + y_4$