

Millersville University
Department of Mathematics
MATH 365, *Ordinary Differential Equations*, Homework 09
April 08, 2009

Name _____

Please answer the following questions. Answers without justifying work will receive no credit. Partial credit will be given as appropriate, do not leave any problem blank. Each problem is worth 10 points. Your completed assignment is due at class time on Friday, April 10, 2009.

1. Determine the regular and irregular singular points (if any) of the following second order linear ordinary differential equation.

$$t^3(1-t)y'' + (3t+2)y' + t^4y = 0$$

2. Find the general solution of the following ordinary differential equation.

$$t^2 y'' + ty' - 9y = 0$$

3. Find the general solution of the following ordinary differential equation.

$$t^2 y'' + 3t y' - 3y = t^2 - 4t + 2$$

4. Find a series solution near $t_0 = 0$ to the following ordinary differential equation.

$$t^2 y'' + t y' + (t^2 - 1)y = 0$$