

Millersville University
Department of Mathematics

Name _____

MATH 365, *Ordinary Differential Equations*, Homework 06
February 25, 2009

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, February 27, 2009.

1. Find the general solutions to the following ordinary differential equations.

(a) $4y'' - y = e^t$

(b) $y'' - 7y' + 6y = \sin t$

(c) $y'' + 16y = 2 \sin t \sin 2t$ (*Hint*: use a product-to-sum formula.)

2. Find the solution to the initial value problem below.

$$\begin{aligned}6y'' + 5y' - 6y &= t \\ y(0) &= 2 \\ y'(0) &= 1\end{aligned}$$

3. Find the solution to the initial value problem below.

$$y'' - 4y' + 5y = 3e^{-2t} + 2t^2$$

$$y(0) = 0$$

$$y'(0) = 3$$