

Math 311
 Fall 2008
 35 points total

Graded Homework 2

Name: _____

- 1) Find the interval of existence and uniqueness for $t^2 y'' + 2ty' + \ln(t)y = t^2$,
 $y(1) = 4$, $y'(1) = 6$

- 2) Solve
 - a) $y'' - 9y = 0$
 - b) $4y'' + 4y' + y = 0$
 - c) $y'' - 2y + 5y = 0$

- 3) Are e^{2x} , e^{-2x} , 3 linearly independent?

- 4) Find the Wronskian without solving the D.E. $ty'' - t(t+4)y' + (t+2)y = 0$.

- 5) Solve
 - a) $y'' - 2y' + 5y = e^x \cos(3x)$ (undetermined coefficients).
 - b) $y'' + y = \frac{1}{\sin t}$ (variation of parameters)

- 6) Give the form of y_p using undetermined coefficients but do not compute the coefficients.
 - a) $y'' - 2y' + y = x^2 e^x$

 - b) $y'' - 3y' - 10y = x^2 \cos(x) + 5$