

Instructor: Leopoldo P. Franca

NAME: _____

TEST # 2:

Please show all your work in the test. Guessed answers are NOT acceptable. You may use calculators. Good luck!

(40 pt) 1) Find general solutions of the following differential equations:

a) $y'' + 9y = 0$

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

c) $2y''' - y'' = 0$

d) $y''' + 7y'' + 24y' - 32y = 0$

(20 pt) 2) Find a general solution to $y'' + y' - 12y = 0$, and the solution for which $y(0) = 0$ and $y'(0) = 7$.

(20 pt) 3) Find a general solution to $y'' - 6y' + 13y = 25 \sin(2x)$, using the method of undetermined coefficients.

(20 pt) 4) Solve by variation of parameters the nonhomogeneous equation

$$y'' + 8y' + 16y = \frac{e^{-4x}}{x^4} \quad x > 0$$