

Due at the beginning of class on the day of Test 2

Direction: Solve the problems in this worksheet on separate sheets of paper. Write your solution neatly. Use standard size paper. Clearly label each problem, and include each problem in the correct order. No ragged edges. Staple multiple pages. At the top of the first page put your name, Math 2320, and the title of the homework assignment. Show all work to justify your answer. Answer with insufficient work will receive no credit.

Problem 1: Form of a particular solution - Case 1

Determine the form of a particular solution for the given nonhomogeneous equation (Do not solve for the coefficients):

1. $y'' - y = (1 + x + x^2)e^{2x}$ 2. $4y'' - y = 3x^2e^{4x}\cos(25x)$ 3. $y'' + 4y' + 4y = (x^2 - 1)e^{2x} + \sin(x)$.

Problem 2: Solve a nonhomogeneous equation - Case 1

Solve the equation

1. $y'' - 5y' + 6y = xe^x$ 2. $4y'' - 4y' - 3y = \cos(2x)$ 3. $y'' - y = x\sin(x)$

Problem 3: Solve a nonhomogeneous equation - Case 1

1. $y'' - 2y' - 8y = 9xe^x + 10e^{-x}$ 2. $y^{(4)} - 2y'' + y = x - \sin x$

Problem 4: Form of a particular solution - Case 2

Determine the form of a particular solution for the given nonhomogeneous equation (Do not solve for the coefficients):

1. $y'' + 9y = 4x^3\sin(3x)$ 2. $y'' - 4y + 4y = x^2e^{2x} - e^{2x}$ 3. $y''' - 2y'' + y' = 2 - 24e^x + 40e^{5x}$

Problem 5: Solve a nonhomogeneous equation - Case 2

1. $y'' + 4y = 3\sin(2x)$ 2. $y'' + 2y' + 2y = e^{-x}\cos x$

Problem 6: Solve a nonhomogeneous equation - Case 2

1. $y''' - 6y'' = 3 - \cos(x)$ 2. $y''' - 3y'' + 3y' - y = e^x$