

MA 2132

Polytechnic University

WORKSHEET 2

DATE: \_\_\_\_\_

Print Name:
Signature:
ID #:
Instructor:

Problem	Possible	Points
1	20	
2	20	
3	24	
4	16	
5	20	
Total	100	

YOUR SIGNATURE:

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(1) Find the particular solution of the equations.

(a)  $y' + (\cos x)y = \cos x, y(\pi) = 0$

(b)  $(x^2 + 1)y' - 2xy = x^2 + 1, y(1) = \pi$

YOUR SIGNATURE:

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(2) Find the general solution of the differential equation.

(a)  $2xy' + 3y + x^4y^3 = 0$

(b)  $xy' - y + e^x y^2 = 0, \quad x > 0$

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(3) Express the general solution of the given differential equation in terms of exponential functions, if possible.

(a)  $2y'' + 5y' - 3y = 0$

(b)  $y''' - 4y' = 0$

(c)  $y'' - 20y' + 100y = 0$

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(4) For each of the following differential equations find all numbers  $r$ , real and complex, such that  $e^{rx}$  is a solution. Find all linearly independent real solutions.

(a)  $(D^2 + 4D + 5)y = 0$

(b)  $y^{(5)} + 4y''' = 0$

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(5) Find the solution of the initial value problem.

$$y'' + 2y' + 2y = 0, \quad y(0) = 2, \quad y'(0) = -3$$