

Math 202 - Midterm (Summer 11)

T. Tlas

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- All questions have extra sheets for you to write your answers on them. Any part of your answers written on the wrong page will not be graded.
- There are 3 problems in total. Some questions have several parts to them. Make sure that you attempt them all.
- This is a closed book exam and no calculators are allowed.
- The exam is out of 40.

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Name :

ID # :

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<i>Q1</i>	
<i>Q2</i>	
<i>Q3</i>	
<i>TOTAL</i>	

Problem 1

(5 points each) Solve the following IVPs:

i-

$$y' = y^2 \cos(x) \quad ; \quad y(0) = 1$$

ii-

$$y' = -\frac{2xy}{x^2 + \cos(y)} \quad ; \quad y(0) = 0$$

iii-

$$y' = \frac{1}{\sin(x + 2y)} - \frac{1}{2} \quad ; \quad y(0) = 0$$

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ADDITIONAL SHEET FOR PROBLEM 1 ANSWER

Problem 2

(14 points) Solve the IVP

$$y'' + xy' + y = 0 \quad ; \quad y(0) = 1 \quad , \quad y'(0) = 0$$

Also, find $y(2)$.

Hint: One of the series that you'll obtain cannot be written in closed form, but this won't be needed anywhere in this question.

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ADDITIONAL SHEET FOR PROBLEM 2 ANSWER

Problem 3

Solve the following IVPs:

i- (3 points)

$$x^2 y'' + xy' + 4y = 0 \quad ; \quad y(1) = 1 \quad , \quad y'(1) = 0$$

ii- (8 points)

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

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ADDITIONAL SHEET FOR PROBLEM 3 ANSWER

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