



Handout 5

MATH 172 Lab: Sections 7 and 8

Lab Instructor (TA): Mohammed Kaabar

Student's Name:-----

Student's ID:-----

Note: This handout covers only differential equations and integration by parts.

Instruction: Work in groups to solve the following mathematical problems. DON'T AFRAID TO MAKE MISTAKES BECAUSE WE LEARN FROM OUR MISTAKES!

Problem 1: Find the general solution of the given differential equation:

$$\frac{dy}{dx} = \frac{\sqrt{1-y^2}}{\sqrt{1-x^2}}$$

(Hint: General solution means that you need to write it as $y(x)$ as we did in the Differential Equations Lab on Thursday)

Problem 2: Find the general solution of the given differential equation:

$$\frac{dy}{dx} = 3xe^{(x+5y)}$$

(Hint: General solution means that you need to write it as $y(x)$ as we did in the Differential Equations Lab on Thursday)

Problem 3: Evaluate the following integral:

$$\int \tan^{-1}(x) \, dx$$

Challenging Problem: Solve the following differential equation:

$$\frac{dy}{dx} = \frac{\sin(5x + y)}{\cos(5x + y) - 2\sin(5x + y)} - 5$$

(Hint: No need to write your solution as $y(x)$)

Good Luck in Quiz 3

Best Regards,

Mohammed Kaabar