**Fall 2019**

# MTH632: Complex Analysis and Differential Geometry

**Assignment No. 1 (Lectures # 1 to 12)** **Total Marks: 10**

**Due Date: Tuesday, November 26, 2019**

**Please read the following instructions before attempting the solution of this assignment:**

- To solve this assignment, you should have good command over 1 to 12 lectures.
- Try to consolidate your concepts that you learn in the lectures with these questions.
- Upload assignments properly through VULMS. No Assignment will be accepted through Email.
- Write your ID on the top of your solution file.
- All students are directed to use the font and style of text as is used in this document.
- Use MathType or Equation Editor etc. for mathematical symbols and equations.
- Remember that you are supposed to submit your assignment in MS-Word format any other format like scanned, images, MS-Excel, HTML etc. will not be accepted.
- Do not use colorful backgrounds in your solution files.
- This is an individual assignment (not a group assignment). So keep in mind that you are supposed to submit your own, self-made and different assignment even if you discuss the questions with your class fellows. All similar assignments (even with some meaningless modifications) will be awarded zero marks and no excuse will be accepted. This is your responsibility to keep your assignment safe from others.

**Note:**

- **Up to 50% marks might be deducted for those assignments which are received after due date.**
- **- No Assignment will be accepted once the Assignment solutions are uploaded.**

| **Question No. 1:** | **Marks: 10** |
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Suppose that $f(z) = x^2 - y^2 - 2y + i(2x - 2xy)$, where $z = x + iy$. Use the expressions

$$x = \frac{z + \bar{z}}{2} \quad \text{and} \quad y = \frac{z - \bar{z}}{2i}$$

to write $f(z)$ in terms of $z$, and simplify the result.