



# COMSATS University Islamabad

## Attock Campus

### Department of Mathematics

#### Assignment # 01

**Class:** BSM-V  
**Subject:** Real Analysis I  
**Instructor:** Dr. Atiq ur Rehman

**Due Date:** 26-9-2022 (12:00PM)  
**Course Code:** MTH321  
**Marks:** 10

**Note:** Please follow the due date & time strictly.  
Student must submit the hard copy of the assignment during office time.

#### Question # 1:

Show that for any two real numbers  $a$  and  $b$ .

$$\max\{a, b\} = \frac{1}{2}(a + b + |a - b|).$$

#### Question # 2:

Prove that there is no rational number  $p$  such that  $p^2 = 3$ .

Hint: Use the fact that if 3 divides  $p^2$ , then 3 divides  $p$ .

#### Question # 3:

Write the definitions of open interval, closed interval, half open interval, infinite open interval and infinite closed interval by using [1].

[1] R.G. Bartle, and D.R. Sherbert, *Introduction to Real Analysis*, 4<sup>th</sup> Edition, John Wiley & Sons, Inc., 2011.

#### Academic Honesty Requirements:

You are encouraged to work with others in the completion of assignments, but it doesn't include copying. However, in the spirit of Academic Honesty, which includes crediting others for their contribution to your work, please include one of the following statements with every submitted assignment on title page:

1. I worked alone on this assignment.
2. I worked with the following: List their full names. Include their relationship to you if they are not also a member of this class.