



# COMSATS University Islamabad

## Attock Campus

### Department of Mathematics

#### Assignment # 03

**Class:** BSM-V

**Subject:** Real Analysis I

**Instructor:** Dr. Atiq ur Rehman

**Due Date:** 10-12-2021 (11:30AM)

**Course Code:** MTH321

**Marks:** 10

#### Instructions:

- a) Please follow the due date strictly.
- b) This assignment can be completed on one a4 page.
- c) There is no need to write the statement of question before solution.

#### Question # 1:

If  $\sum a_n$  and  $\sum b_n$  are convergent, then show that  $\sum (a_n + b_n)$  is convergent.

#### Question # 2:

If  $\sum a_n$  with  $a_n > 0$  is convergent, then is  $\sum a_n^2$  always convergent? Either prove it or give a counter-example.

#### Question # 3:

Find the value of  $\alpha$  for which  $\sum \frac{1}{n^{\alpha^2+1}}$  is divergent.

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#### 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.