DEPARTMENT OF MATHEMATICS

COMSATS University Islamabad, Attock Campus

Quiz # 2

Class: MSc: Sem. III
Max. Marks: 10
Course Title: Convex Analysis
Course Code: MTH424
Instructor: Dr. Atiq ur Rehman
Due Date: 25-11-2020 (1800 hrs)

Instructions:

- Please name the PDF as q2-mth424-xyz, where *xyz* is last three digits of your registration number (e.g. if your registration number is fa19-mmt-041, then name file as q2-mth424-041) before submission.
- Similarity of a solution with other students may reduce your marks.
- Please make sure that the PDF is good before sending and email at *atiq+mth424@cuiatk.edu.pk*
- Please send the solution by email only one time (don't send multiple emails).

Question 1: Prove that $h(x) = 3|x+1|^4 + 2|x-1| - 4$ is convex on $\mathbb{R}$.

Question 2: Let $f : I \to \mathbb{R}^+$ be a concave function, then prove that $\frac{1}{f}$ is convex on I.