College of Basic Education Midterm Exam Subject: Mathematical Analysis

Department of Mathematics Time: 90 Min.

3rd Stage

--------------------------------------------------------------------------------------------------------------------------

**Q1/** Let , define be a function defined by , where then

1. Show that (X,d) is a metric space.
2. Find , and sketch the graph of . (8+4) marks

**Q2/** State and prove Cauchy Schwartz inequality. 6 marks

**Q3/** Prove or disprove the following: -

1. In (R,U), is closed set.
2. Intersection of infinite collection of open sets is also open set. (6+6) marks

College of Basic Education Midterm Exam Subject: Mathematical Analysis

Department of Mathematics Time: 90 Min.

3rd Stage

--------------------------------------------------------------------------------------------------------------------------

**Q1/** Let , define be a function defined by , where then

1. Show that (X,d) is a metric space.
2. Find , and sketch the graph of . (8+4) marks

**Q2/** State and prove Cauchy Schwartz inequality. 6 marks

**Q3/** Prove or disprove the following: -

1. In (R,U), is closed set.
2. Intersection of infinite collection of open sets is also open set. (6+6) marks