HONOURS SEMINAR

Samuel Jaques

A Proof of Müntz' Theorem

Supervised by D. Farenick

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1:30 p.m.
College West 307.20

Abstract

The Weierstrass theorem says that any continuous function on a closed interval can be approximated uniformly by a polynomial. Another way to phrase this is that the span of the integer powers of a variable approximates all continuous functions of that variable. A natural question is whether all the integers are necessary, or whether integer powers are needed at all. Using complex analysis with a dash of measure theory, I'll give a proof of Müntz' theorem, which states that if the sum of the reciprocals of the powers diverges, then linear combinations of these powers can approximate any continuous function uniformly on any closed interval.

University of Regina

Mathematics and Statistics