Menger's Theorem for Infinite Graphs

Dominic Walsh Prize Essay

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Submitted: Michaelmas 2015

Abstract

In the Part B graph theory course we proved a formulation of Menger's theorem with a slick application of the max-flow-min-cut theorem. In this essay, we present a constructive proof of a slight generalisation of that theorem and then move to present the relevant definitions required for a rough introduction to infinite graph theory and a discussion of Aharoni and Berger's proof of a version of Menger's theorem for infinite graphs.

Acknowledgments

This essay inevitably draws greatly from the work of Aharoni and Berger found at arXiv

This essay was written in XeLaTeXbased upon a dissertation template by Federico Maggi and is distributed under a Creative Commons BY-NC-SA 3.0 license at GitHub

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Introduction 1

We begin by recounting Theorem 7.5 from [1]:

Menger

Bibliography

[1] Oliver Riordan. Lecture notes for b8.5 graph theory, 2015.