

Graph Theory Visualization

A Visual Guide to Graph Theory Concepts

Ashita Phulwani

Department of Mathematics

December 5, 2024

Abstract

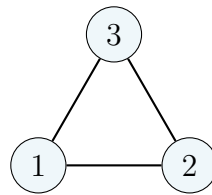
This document provides visual representations of fundamental graph theory concepts using TikZ. It includes examples of basic graphs, Euler paths, network flows, and spanning trees with detailed explanations.

Contents

1	Basic Graph Concepts	2
2	Euler Paths	2
3	Network Flow	2
4	Spanning Trees	2
5	Exercises	2

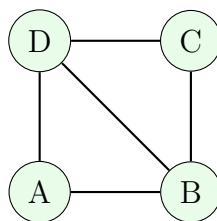
1 Basic Graph Concepts

A graph consists of vertices (nodes) and edges connecting them. Here's a simple example:

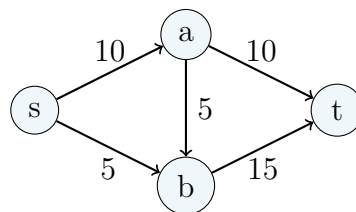


This represents a simple triangle graph with three vertices and three edges.

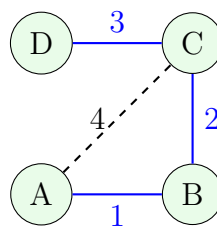
2 Euler Paths



3 Network Flow



4 Spanning Trees



5 Exercises

1. Find an Euler circuit in the first graph if one exists.
2. Calculate the maximum flow in the network diagram.
3. Identify the minimum spanning tree in the last graph.