Trees

1 Why

Tree branches split and do not recombine. We formalize this property in the language of graphs.

2 Definition

A **tree** is a connected acyclic graph.

2.1 Notation

Let (V, E) be a tree. When the vertex set is clear from context, we use use T, a mnemonic for "tree," to denote the edge set. We denote the set of trees on the vertex set V by $T(V)$.

3 Properties

Proposition 1. *In any tree, there is only one path between any two vertices.*

Proof. Suppose to the contrary that there were two paths from vertex u to vertex v, then by combining these paths we obtain a cycle. But the tree has no cycles, so there must not be two paths between any two vertices. □