

Why does Kruskal's algorithm work?

Let $G = (V, E)$ be a connected graph in which every two edges have different weights.

Let T be the spanning tree returned by Kruskal's algorithm and T^* be a minimum spanning tree.

We prove $T = T^*$ by contradiction!

If $T \neq T^*$, then T^* has at least one edge that is not in T .

Let e be any such edge in T^* that is not in T .