Why does Kruskal's algorithm work?

Remember: $T^{**} = T^* - e$ had two components A and B, and f also connects these two components.

Therefore T^{**} is a spanning tree for G

Remember we showed $w(f) < w(e)$

Therefore $w(T^{**}) = w(T^*) - w(e) + w(f) < w(T^*)$

This contradicts T^* being a MST!

Hence T is a MST!