# Assignment 3

1. This problem concerns the Minimum Spanning Tree problem.

   (a) Consider a weighted graph $G$ where there is one edge $e$ that has maximal weight (so no edge in the graph has weight greater than or equal to the weight of $e$) and belongs to a cyclic subgraph of $G$ (so there is some cycle of edges that exists in $G$ where $e$ is a part of that cycle). Convince me that no MST in $G$ can include $e$.

   (b) Consider a weighted graph where there is one edge $e$ that has minimal weight (so no edge in the graph has weight less than or equal to the weight of $e$). Convince me that every MST in $G$ must include $e$.