Graph Theory, Homework 4

Consider the following definitions:

Definition: A vertex v in a connected graph G is called a **cut vertex** if $G - v$ is disconnected

Definition: A connected graph G is called **nonseparable** if it has no cut vertices

Definition: A connected graph G is called **separable** if there exist subgraphs $H_1, H_2 \subset G$ with

- $E(H_1) \cup E(H_2) = E(G)$ and $E(H_1) \cap E(H_2) = \emptyset$,
- $V(H_1) \cup V(H_2) = V(G)$ and $V(H_1) \cap V(H_2)$ containing a single vertex.

Problem:

Show that a connected graph G is not separable if and only if it nonseparable.