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Graphentheorie

2. Übungsblatt WS 05/06
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Exercise 6

Prove that every graph containing only even vertices is bridgeless.

Exercise 7

Let G and H be graphs with $V(G) = \{v_1, \ldots, v_n\}$ and $V(H) = \{u_1, \ldots, u_n\}$, $n \geq 3$. Vertices u_i and u_j are adjacent in H iff $\deg v_i + \deg v_j$ is odd in G. Prove that H is bipartite.

Exercise 8

Prove: An edge of a graph G is a bridge iff there exist vertices u and w such that e is on every $u - w$ path of G.

Exercise 9

Let G be a graph of order $n \geq 3$ with the property that $\deg u + \deg v \geq n$ for every pair u and v nonadjacent vertices of G. Show that G is nonseparable.

Exercise 10

Prove that if v is a cut-vertex of a connected graph, then v is not a cut-vertex of its complement.