Graph Theory; First Set of assignment problems

Monday, 13 January, 2020

Sane

Assume that we are dealing with simple graphs.

1. Show that if a graph G is not connected then its complement $\overline{G}$ is connected. Is the converse true.
2. Construct a regular graph G with degree 3 on $2n$ vertices (with $n > 2$) such that G has no triangles (no subgraph isomorphic to C_3).
3. Prove that a connected graph that has exactly two no-cut-vertices is a path.
4. Show that a simple connected graph with each vertex of degree at least two has a cycle. Is this also true if the graph is not finite?