MA010 Graph Theory—Homework Set #3

Each problem is worth 3 points. The solutions should be submitted using the university information system by **December 9**. Please submit your solutions as pdf files produced by a suitable text editor, e.g., LaTeX; solutions that are not submitted as pdf files may be assigned no points. Your solution should contain references to all sources, including those available on the web, that you have used.

1. Show that every 3-vertex-connected graph contains a subdivision of K_4.

2. Show that every 3-edge-connected 3-regular graph is 3-vertex-connected.

3. Show that if G is a chordal graph, then the maximum k such that G is k-vertex-connected is equal to $\chi(G) - 1$.

4. Show that a graph G is 2-edge-connected if and only if G is connected and every edge is contained in a cycle.