

Computer Science 221

Sample Solutions to: Practice Questions—Set 6 (cont.) (i.e., Set 6, Question 5)

5. The only non-planar graphs are those which contain either the complete graph K_5 or the complete bipartite graph $K_{3,3}$ as a subgraph.

(a) Yes, by taking away any vertex (and its incident edges) from K_5 we get K_4 which is planar.

(b) No, by taking away any vertex (and its incident edges) from K_6 we get K_5 which is not planar.

(c) Yes, by taking away any vertex (and its incident edges) from $K_{3,3}$ we get $K_{2,3}$ or $K_{3,2}$ —either of which is planar.

(d) No, by taking away a specific vertex (and its incident edges) from $K_{3,4}$ we can get $K_{3,3}$ which is not planar.