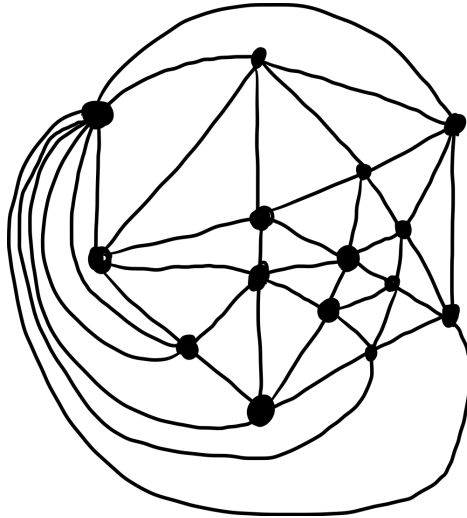4

Show that Corollary 10.3 cannot be improved by giving an example of a planar graph that contains no vertex of degree 4 or less.

5

(a) Show that the Petersen graph does not contain a subdivision of K_5.

(b) Show that the Petersen graph is nonplanar.

6

Does there exist a 4–regular planar graph of order 7?

7

Find all graphs G of order $n \geq 5$ and size $m = 3n - 5$ such that $G - e$ is planar for every edge e of G.

8

Find all cycles C_n of order $n \geq 3$ for which $\overline{C_n}$ is a nonplanar graph.

18

Show that both K_5 and $K_{3,3}$ are minors of the graph G in Figure 10.13

19

Suppose that a connected graph H is a minor of a tree T. Show that H is also a tree.