MATH 239 Intro to Combinatorics, Assignment 6   Not to be handed in
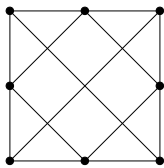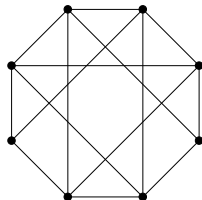
1: Determine which of the following graphs are planar.

(a)

(b)

(c) $S_{5,3,1}$

2: (a) Let G be a graph in which $\deg(v) \geq 5$ for every vertex v. Suppose G has a planar embedding such that $\deg(f) \geq 3$ for every face f. Show that G has at least 12 vertices. Find a planar embedding of such a graph with exactly 12 vertices.

(b) Let G be a connected graph which has a planar embedding in which $\deg(f) \geq 4$ for every face f. Show that G has at least 3 vertices of degree at most 3. Find a planar embedding of such a graph with exactly 3 vertices of degree at most 3.