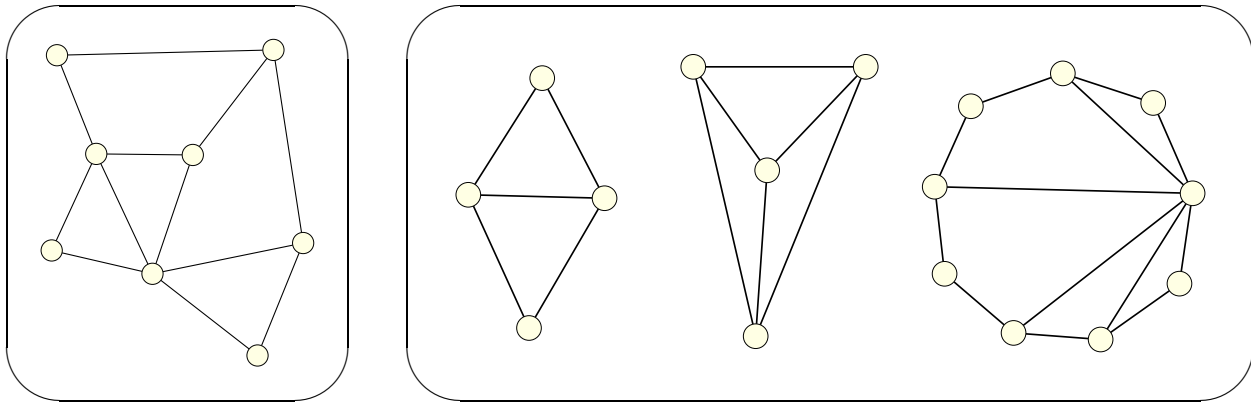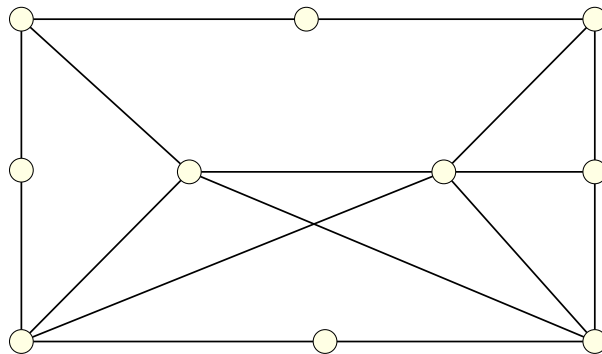# Exercise Sheet 5

Issue date: 12 December 2002   **Hand in by** 18 December 2002
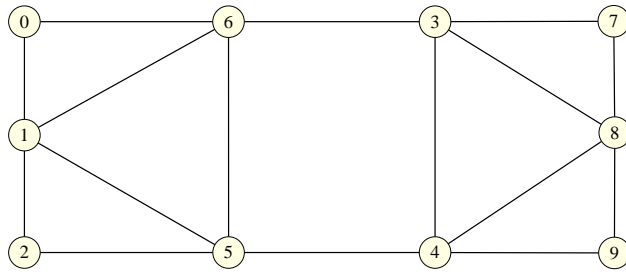**Exercise class:** 20 December 2002 **in E225**

Exercise 5.1: Determine the number of faces of the following two embedded graphs. Then, embed each of the two graphs such that the outer face has only three edges.

Exercise 5.2 Can the graph below be embedded in the plane without intersecting edges?

Exercise 5.3: Consider the following graph:

a) Find a matching that is neither maximal nor maximum.

b) Find a matching that is maximal but not maximum.

c) Find a matching that is maximum

d) Does the graph contain a 2-factor?

Exercise 5.4: For each natural number $n \geq 2$ specify a connected graph with n nodes such that a maximum matching in the graph consists of exactly

a) $\lfloor \frac{n}{2} \rfloor$ edges

b) one edge