

## Discrete Mathematics I Assignment 10 (January 18, 2006)

(This assignment is due on January 25, 2006, 1.00 p.m., by dropping it into the wooden box in front of F 310)

### Exercise 1 (Adjacency matrix and adjacency lists):

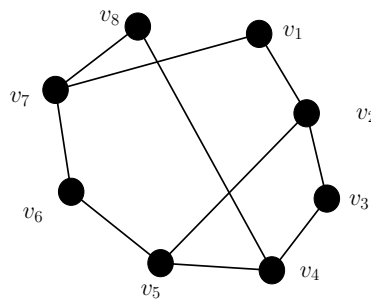


Abbildung 1: Graph G

Represent the graph G by an adjacency matrix and by adjacency lists.

(15+15 Points)

### Exercise 2 (Matching and vertex cover):

- Let  $M$  be a maximum matching and  $VC$  a minimum vertex cover in a graph  $G$ . Prove that  $|M| \leq |VC|$ .
- Draw a graph where  $|M| < |VC|$ . Prove that the matching and the vertex cover you chose are of maximum respectively minimum size.

(20+10 Points)