## MAT2440 - Final Review

- Attention: Remember that this is only a review for the new material since Exam 3, see the old review sheets for older material.
  - 1. Find the number of vertices, the number of edges, and the degree of each vertex in the following graphs.



- 2. Draw the graphs  $K_6$ ,  $K_{2,3}$ ,  $W_5$ ,  $C_8$ , and  $Q_3$ .
- 3. Determine whether each of these graphs is strongly connected and if not, whether it is weakly connected.



4. Answer the following questions for the rooted tree illustrated.



- (a) Which vertex is the root?
- (b) Which vertices are internal?
- (c) Which vertices are leaves?
- (d) Which vertices are children of g?
- (e) Which vertex is the parent of h?
- (f) Which vertices are siblings of s?
- (g) Which vertices are ancestors of m?
- (h) Which vertices are descendants of d?
- 5. How many vertices does a full 4-ary tree with 200 internal vertices have?
- 6. Build a binary search tree for the words *creation*, *flywheel*, *pea*, *definition*, *rumour*, *mole*, *policeman*, and *prize* using alphabetical order.
- 7. Determine the order in which a preorder/inorder/postorder traversal visits the vertices of the given ordered rooted tree below.



8. Using c as the root and, assuming that the vertices are ordered alphabetically, use a depth/breadth-first search to find a spanning tree for the following graphs.

