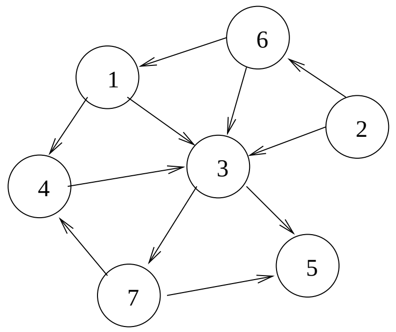
CSE 373 **Review Problems**

These problems are not to be handed in. They are intended to help you prepare for the midterm.

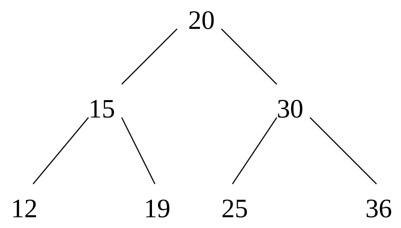
1. (a) Sort the following array of numbers using radix sort: (373, 733, 276, 486,473, 356). For each pass through the data, show the contents of the queues (also called buckets) just after the numbers have been distributed into the queues.

   (b) Radix sort can be used to sort an array of 64-bit numbers in 4 passes by partitioning the numbers into 4 16-bit fields, each of which represents an integer between 0 and $2^{16} - 1$. How many queues would be needed in this case?

2. Use the function *Mark* to compute the set of vertices reachable from vertex 1 in the following directed graph. Show the data structure for the graph and the array M after the completion of each function call.



3. Show the binary search tree that results from the deletion of the root from the following binary search tree:



4. (a) Draw an AVL tree T that contains the seven keys $1, 2, 3, 4, 5, 6$ and 7 and no other keys, and has height 3(the height of a binary tree is the maximum number of edges in a path from the root to a leaf).

   (b) Give the AVL tree that results when the leftmost leaf at distance 2 from the root is deleted from T.