Homework 4

Due on November 6

Question 1 [25 points] Design a linear-time algorithm to find an odd-length cycle in a directed graph.

Question 2 [25 points] Design an efficient algorithm to determine, in a directed graph $G = (V, E)$, whether or not there exists a vertex $v \in V$ from which all other vertices are reachable.

Question 3 [25 points] Design an efficient algorithm to compute the number of different directed paths from vertex v to vertex w in a directed acyclic graph G.

Question 4 [25 points] Design a linear-time algorithm to determine, in a directed acyclic graph G, whether or not there is a directed path that touches every vertex exactly once.