Problem 1 (10 points):
Page 192, Exercise 8

Problem 2 (10 points):
Page 192, Exercise 9

Problem 3 (10 points):
Page 198, Exercise 19

Problem 4 (10 points):
Let $G = (V, E)$ be a directed acyclic graph with lengths assigned to the edges. Give an $O(n + m)$ time algorithm that given vertices $s, t \in V$ finds a maximum length path from $s$ to $t$. Justify that your algorithm is correct.

Problem 5 (10 points):
Let $G = (V, E)$ be a directed graph with lengths assigned to the edges. Let $\delta(u, v)$ denote the shortest path distance from $u$ to $v$. Prove that for all vertices $u, v, w \in V$:

$$
\delta(u, w) \leq \delta(u, v) + \delta(v, w).
$$