Quiz over the Dynamic Programming and NP-completeness chapters

Your name:

Consider the problem of assigning sales people to regions in such a way as to maximize yield. There are 6 sales people and 3 regions, each region has to be covered by at least one salesperson, and the following are the expected yields of assigning more or less people to regions.

number of	region		
people	1	2	3
1	4	3	5
2	6	6	7
3	9	8	10
4	11	10	12

Write out the principle of optimality as it applies to this problem, and solve the problem by dynamic programming.

Which of the following can we infer from the fact that the traveling salesperson problem is NP-complete, if we assume that P is not equal to NP?

1. There does not exist an algorithm that solves arbitrary instances of the TSP problem.
2. There does not exist an algorithm that efficiently solves arbitrary instances of the TSP problem.
3. There exists an algorithm that efficiently solves arbitrary instances of the TSP problem, but no one has been able to find it.
4. The TSP is not in P.
5. All algorithms that are guaranteed to solve the TSP run in polynomial time for some family of input points.
6. All algorithms that are guaranteed to solve the TSP run in exponential time for all families of input points.