Reductions

2/3 points earned (66%)

You haven't passed yet. You need at least 80% to pass.
Review the material and try again! You have 3 attempts every 8 hours.

Review Related Lesson

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0 / 1
points

1.
(seed = 873309)

Which of the following problems can be linear-time reduced *to* the standard maximum st-flow problem in digraphs? Check all that apply.

- [x] Given a digraph with positive edge weights and two distinct vertices s and t, find a minimum capacity st-cut.

Correct

- [x] Given an undirected graph with positive edge weights and two distinct vertices s and t, find a maximum flow between s and t.

Correct

- [ ] Given a graph (not necessarily bipartite), find a matching of maximum cardinality.

Un-selected is correct

- [ ] Given a bipartite graph, find a matching of maximum cardinality.

This should be selected

- [x] Given an undirected graph with positive edge weights and two distinct vertices s and t, find a minimum capacity cut that separates s and t.

Correct

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1 / 1 points

2.
(seed = 608030)

Which problems are known to have the same asymptotic complexity as multiplying two N-bit integers? Check all that apply.

- [x] Computing the remainder when dividing one N-bit integer into an N-bit integer.

Correct

- [x] Multiplying two N-bit integers.

Correct

- [x] Computing the square root of an N-bit integer, and rounding it down to the nearest integer.

Correct

- [x] Factoring an N-bit integer.

Un-selected is correct

- [x] Squaring an N-bit integer.

Correct

1 / 1
points

3.
(seed = 494117)

Suppose that problem A linear-time reduces to problem B. Which of the following can you infer? Check all that apply.

- [ ] A can be solved in poly-time.

Un-selected is correct

- [ ] B can be solved in poly-time.

Un-selected is correct

- [x] If B can be solved in linear time, then so can A.

Correct

- [ ] If A can be solved in quadratic time, then B can be solved in poly-time.

Un-selected is correct

- [x] If B can be solved in quadratic time, then so can A.

Correct