## 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.

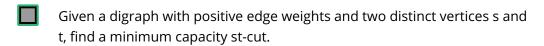
**Review Related Lesson** 



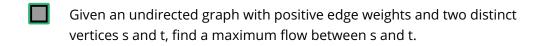
0/1 points

1. (seed = 873309)

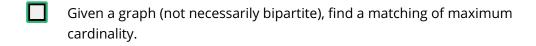
Which of the following problems can be linear-time reduced \*to\* the standard maximum st-flow problem in digraphs? Check all that apply.



Correct



Correct



Un-selected is correct

Given a bipartite graph, find a matching of maximum cardinality.

| This should be selected |   |  |
|-------------------------|---|--|
| Corre                   | 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. |  |
| 2.<br>seed =            | 1 / 1<br>points<br>608030)  |  |
|                         | problems are known to have the same asymptotic complexity as multiplying pit integers? Check all that apply.                                |  |
|                         | Computing the remainder when dividing one N-bit integer into an N-bit integer.  |  |
| Corre                   | ect   |  |
|                         | Multiplying two N-bit integers.   |  |
| Corre                   | ect   |  |
| Corre                   | Computing the square root of an N-bit integer, and rounding it down to the nearest integer.   |  |
| Un-se                   | Factoring an N-bit integer.   |  |
|                         |   |  |

Squaring an N-bit integer.

| 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   |   |  |
| 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   |   |  |
| If B can be solved in quadratic time, then so can A.   |   |  |
| Correct  |   |  |
|  |   |  |





