Reductions

1/3 points earned (33%)

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 = 646763)

Which of the following problems can be linear-time reduced *from* element distinctness: Given an array of N real numbers, are they all distinct? Assume the quadratic decision tree model of computation. Check all that apply.

- [ ] Given an array of N real numbers, rearrange the elements in ascending order.

This should be selected

- [ ] Given N points in the plane, compute the convex hull.

This should be selected

- [ ] Given an edge-weighted graph, compute the minimum spanning tree.

This should not be selected

- [ ] Given N points in the plane, compute the minimum spanning tree, where the weight between two points is its Euclidean distance.

Correct

- [x] Given two arrays of N real numbers, find an elemenet that appear in both arrays.

Correct

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1 / 1 points

2.
(seed = 289346)

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

- [ ] Adding two N-bit integers.

Un-selected is correct

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

Correct

- [ ] Determining whether an N-bit integer is prime.

Un-selected is correct

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

Correct

- [ ] Factoring an N-bit integer.

Un-selected is correct

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0 / 1
points

3.
(seed = 709661)

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

- [x] If A cannot be solved in linear time, then neither can B.

Correct

- [ ] A cannot be solved in poly-time.

Un-selected is correct

- [ ] B cannot be solved in poly-time.

Un-selected is correct

- [ ] If A cannot be solved in poly-time, then neither can B.

This should be selected

- [ ] If A cannot be solved in linear time, then B cannot be solved in poly-time.

Un-selected is correct
