CS 173, Fall 2014
Examlet 13, Part B

NETID:

FIRST: | **LAST:**

Discussion: Thursday 2 3 4 5 Friday 9 10 11 12 1 2

(15 points) Check the (single) box that best characterizes each item.

The set $\mathbb{Q}^2$ is

- finite ☐
- countably infinite ☑
- uncountable ☐

Suppose A is a non-empty set. Then $\mathbb{P}(A)$ is larger than A.

- true ☑
- false ☐
- true for finite sets ☐

There exist mathematical functions that cannot be computed by any C program.

- true ☑
- false ☐
- not known ☐

The real numbers are countable.

- true ☐
- false ☑
- not known ☐

A piano tune is a finite sequence of notes found on the standard piano keyboard. The set of all piano tunes is

- finite ☐
- countably infinite ☑
- uncountable ☐

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(15 points) Check the (single) box that best characterizes each item.

There are mathematical functions that don't have a finite formula.

true [√] false [ ] not known [ ]

The rational numbers have the same cardinality as the integers.

true [√] false [ ] not known [ ]

The set of all full binary trees where each node contains one of the letters A, B, or C is

finite [ ] countably infinite [√] uncountable [ ]

The set containing all functions f from the set of even integers to the set of even integers is

finite [ ] countably infinite [ ] uncountable [√]

If A is countably infinite, then $\mathbb{P}(A)$ is countably infinite

never [√] sometimes [ ] always [ ]