

**CSE 373 QuickCheck 2**

Name: \_\_\_\_\_ Student ID: \_\_\_\_\_

For answers that involve filling-in a , fill-in the shape completely: .

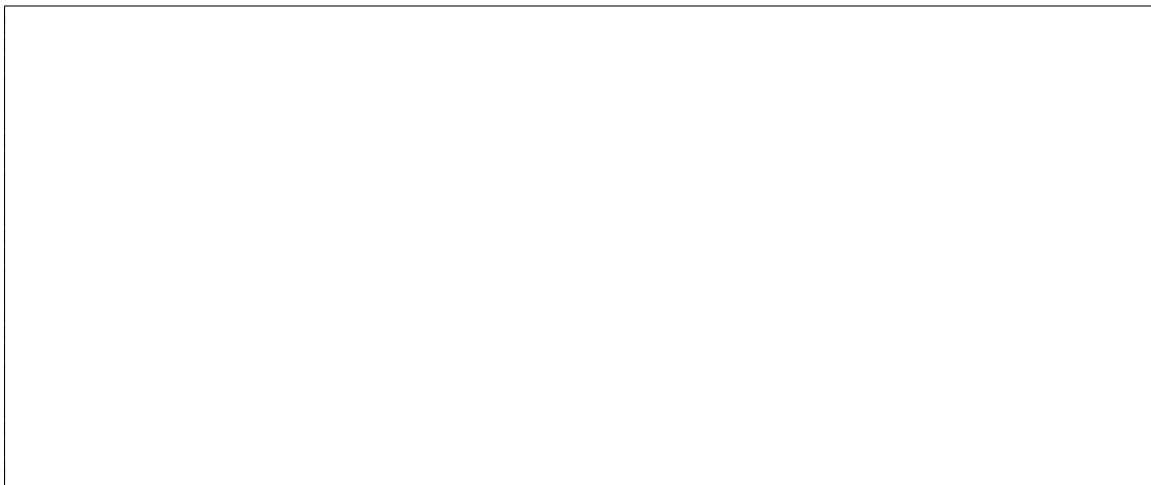
1. Mark all of the following true expressions about the height of a binary search tree of size  $N$ .

- |                                      |   |   |
|--------------------------------------|---|---|
| <input type="checkbox"/> $O(\log N)$ | <input type="checkbox"/> $\Theta(\log N)$ | <input type="checkbox"/> $\Omega(\log N)$ |
| <input type="checkbox"/> $O(N)$      | <input type="checkbox"/> $\Theta(N)$      | <input type="checkbox"/> $\Omega(N)$      |

2. Mark all of the following true expressions about the height of a B-tree of size  $N$ .

- |                                      |   |   |
|--------------------------------------|---|---|
| <input type="checkbox"/> $O(\log N)$ | <input type="checkbox"/> $\Theta(\log N)$ | <input type="checkbox"/> $\Omega(\log N)$ |
| <input type="checkbox"/> $O(N)$      | <input type="checkbox"/> $\Theta(N)$      | <input type="checkbox"/> $\Omega(N)$      |

3. Draw the 2-3 tree that results from inserting the following items in this order: 1, 2, 3, 7, 8, 9, 5.



4. Draw the corresponding left-leaning red-black tree. Write “red” next to red links.

