1. Consider a binary search tree $T$ storing $n$ (key, value) pairs, and let $h$ denote the height of $T$. In the best case, $h$ is $O(\log n)$ and in the worst case, $h$ is $O(n)$ (use asymptotic notation).

2. Consider a binary search tree $T$ storing $n$ (key, value) pairs, and let $h$ denote the height of $T$. The time for a find($k$) operation is $O(h)$ and the time for a put($k,v$) operation is $O(h)$.

3. Draw a binary search tree that would result from inserting the following items in this order (assume the key and value are the same): 10, 20, 30, 40.

```
          10
         /   \
        20
       /  \
      30  \
     /    \
    40
```

4. Consider an AVL tree $T$ storing $n$ (key, value) pairs, and let $h$ denote the height of $T$. In the best case, $h$ is $O(\log n)$ and in the worst $h$ is $O(\log n)$ (use asymptotic notation).

5. Consider an AVL tree $T$ storing $n$ (key, value) pairs. The time for a find($k$) operation is $O(\log n)$ and the time for a put($k,v$) operation is $O(\log n)$.

6. Draw an AVL tree that would result from inserting the following items in this order (assume the key and value are the same): 10, 20, 30, 40.

```
          20
         /   \
        10
       /  \
      30  \
     /    \
    40
```