Tutorial 1: Jan 15

1. Prove from first principles that $n \in \omega\left(2^{\sqrt{\log n}}\right)$.

2. Prove or disprove the following claim. If $h_1(n) \in \Theta(f(n))$ and $h_2(n) \in \Theta(g(n))$, then $\frac{h_1(n)}{h_2(n)} \in \Theta\left(\frac{f(n)}{g(n)}\right)$. You should prove the statement from first principles or provide a counter example.

3. Insert 27 and 9 into the following heap, and then perform a delete-max operation on the resulting heap.