1. Manber 6.34 (Note that older printings of the textbook might have different wording. So here is the “official” version of the problem.)

The input is a heap of size $n$ (in which the largest element is on top), given as an array, and a real number $x$. Design an algorithm to determine whether the $k$th largest element in the heap is less than or equal to $x$. The worst-case running time of your algorithm should be $O(k)$, independent of the size of the heap. You can use $O(k)$ space. (Notice that you do not have to find the $k$th largest element; you need only determine its relationship to $x$.)

2. Manber 6.55

3. Manber 6.57