Insertion in heap

(a) You are given an empty array of size 7.

0	1	2	3	4	5	6

Insert the following numbers using min-heap insertion:

$$3, 5, 10, 8, 4, 2, 7$$

Fill out the table as it looks after all the numbers have been inserted. Write the answer as a comma-separated list.

(b) Briefly explain how the algorithm for insertion in a min-heap works, and sketch the algorithm with pseudocode. You can assume that the array in the input is not full.

Input: An array A that represents a heap with n elements, and an element x
Output: An array that represents a heap, which contains x

```
1 Procedure HeapInsert(A, x)
  |   // ...
```

(c) Account for the runtime complexity of the algorithm.