

CS 5300 Advanced Algorithms
HW # 4

1. What are the minimum and maximum numbers of elements in a heap of height h ?
2. Is the array with values $\langle 23, 17, 14, 6, 13, 10, 1, 5, 7, 12 \rangle$ a max-heap? Show your work
3. Illustrate the operation of MAX-HEAPIFY($A, 3$) on the array
 $A = \langle 27, 17, 3, 16, 13, 10, 1, 5, 7, 12, 4, 8, 9, 0 \rangle$
4. Illustrate the operation of BUILD-MAX-HEAP on the array
 $A = \langle 5, 3, 17, 10, 84, 19, 6, 22, 9 \rangle$
5. Illustrate the operation of HEAPSORT on the array $A = \langle 5, 13, 2, 25, 7, 17, 20, 8, 4 \rangle$
6. Illustrate the operation of HEAP-EXTRACT-MAX on the heap
 $A = \langle 15, 13, 9, 5, 12, 8, 7, 4, 0, 6, 2, 1 \rangle$
7. Illustrate the operation of MAX-HEAP-INSERT($A, 10$) on the heap
 $A = \langle 15, 13, 9, 5, 12, 8, 7, 4, 0, 6, 2, 1 \rangle$