

**Training Problems #4****From Sections 6.1 to 6.4:****1.**

Is the array with values  $\langle 23, 17, 14, 6, 13, 10, 1, 5, 7, 12 \rangle$  a max-heap?

**2.**

Using Figure 6.2 as a model, illustrate the operation of  $\text{MAX-HEAPIFY}(A, 3)$  on the array  $A = \langle 27, 17, 3, 16, 13, 10, 1, 5, 7, 12, 4, 8, 9, 0 \rangle$ .

**3.**

What is the effect of calling  $\text{MAX-HEAPIFY}(A, i)$  when the element  $A[i]$  is larger than its children?

**4.**

What is the effect of calling  $\text{MAX-HEAPIFY}(A, i)$  for  $i > A.\text{heap-size}/2$ ?

**5.**

Using Figure 6.3 as a model, illustrate the operation of  $\text{BUILD-MAX-HEAP}$  on the array  $A = \langle 5, 3, 17, 10, 84, 19, 6, 22, 9 \rangle$ .

**6.**

Using Figure 6.4 as a model, illustrate the operation of  $\text{HEAPSORT}$  on the array  $A = \langle 5, 13, 2, 25, 7, 17, 20, 8, 4 \rangle$ .

**7.**

Illustrate the operation of  $\text{MAX-HEAP-INSERT}(A, 10)$  on the heap  $A = \langle 15, 13, 9, 5, 12, 8, 7, 4, 0, 6, 2, 1 \rangle$ .