CLRS 2-4

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a. $\{(2,1),(3,1),(8,6),(8,1),(6,1)\}$

b. $\{n, n-1, \ldots, 2, 1\}$

$$\sum_{i=1}^{n} i = \frac{n(n-1)}{2} \tag{1}$$

$$= \Theta(n^2) \tag{2}$$

c. Insertion sort works by inverting up to $i-1$ pairs for every $a_i \in A$; and therefore has $\Theta(n^2)$ complexity.

d. See `inversions.scm` and `2-4.scm`; it works by counting all merged elements where $L[i] > R[j]$. After the merge, the elements will be in order and thus not counted twice; if there is a $L[i] > R[j]$ which was not counted, we would have incremented the right counter not the left: resulting in a contradiction.