Running times for algorithms

We talk about algorithms being "polynomial time" if their worst case running times are $O(p(n))$ for some polynomial p.

Examples:

- Bubblesort is $O(n^2)$
- Mergesort is $O(n \log n)$
- Longest Increasing Subsequence is $O(mn)$ (where the two strings have length m and n)

But the following are also true:

- Bubblesort is $O(n^3)$
- Mergesort is $O(n^5)$