Algorithm Design

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Solution of Exercise R-1.19

By the definition of big-Oh, we need to find a real constant $c > 0$ and an integer constant $n_0 \geq 1$ such that $(n+1)^5 \leq c(n^5)$ for every integer $n \geq n_0$. Since $(n+1)^5 = n^5 + 5n^4 + 10n^3 + 10n^2 + 5n + 1$, $(n+1)^5 \leq c(n^5)$ for $c = 8$ and $n \geq n_0 = 2$.