

CSE 780 Homework 2

Due: Friday, October 10 by class time

We have proved the following theorem in class.

Theorem 5. If $T(n)$ is asymptotically nondecreasing and $f(n)$ is smooth, then $T(n) = O(f(n)|n \text{ a power of } 2)$ implies $T(n) = O(f(n))$.

1. Show that the theorem would not hold if $T(n)$ is not asymptotically nondecreasing.
2. Show that the theorem would not hold if $f(n)$ is nondecreasing but not smooth.
3. Prove Theorem 6.