
Homework 2, CPSC 4100 – 01 , Winter 2016

1) Determine $T(n)$ in terms of a Big-O notation for the following cases. Use expansion method:

a. $T(n) = T(n - 2) + bn + c$
 $T(1) = d$

where b, c, and d are constants.

b. $T(n) = 2T(n - 1) + 1$
 $T(0) = 0$

20 points

2) Let $f(n)$ and $g(n)$ be asymptotically nonnegative functions. Using the basic definition of Θ -notation, prove that $\max(f(n), g(n)) = \Theta(f(n) + g(n))$. [CLRS 3.1-1]

20 points

3) Prove that $o(g(n)) \cap \omega(g(n))$ is the empty set. [CLRS 3.1-7]

10 points