

Algorithms: Assignment 4

Due date: September 18 (Wednesday)

Problem 1 (5 points)

Give an example of functions $f(n)$ and $g(n)$ that satisfy all of the following conditions:

$$f(n) = O(g(n))$$

$$f(n) \neq \Theta(g(n))$$

$$f(n) \neq o(g(n))$$

Problem 2 (5 points)

Give a precise mathematical proof of the following asymptotic bounds:

(a) $\sqrt{n} = o(n)$

(b) for any constant $a > 0$,
 $(n + 1)^a = \Theta(n^a)$