Worksheet 7

Math 2602
Spring 2015

1. Which of the following functions are $O(1)$? $O(\log(n))$? $O(n)$? $O(n^2)$?
   (a) n^5
   (b) $\log(n^5)$
   (c) $\log(5^n)$
   (d) $\log^n(5)$
   (e) $n \log(n) + n$
   (f) $\sin(n)$

2. Give an algorithm that, given a list of real numbers $a_1, a_2, ..., a_n$, gets the smallest in this list. How fast is your algorithm of your algorithm (what is the time complexity of your algorithm)?

3. (a) Give an algorithm to decide if an integer n is a power of 2. How fast is your algorithm (what is the time complexity of your algorithm)?

   (b) Give an algorithm to decide if an integer n is a prime. How fast is your algorithm (what is the time complexity of your algorithm)?