

1. Arrange the following list of functions in ascending order of growth rate, i.e. if function $g(n)$ immediately follows $f(n)$ in your list then, it should be the case that $f(n) = O(g(n))$.

$$g_1(n) = 2^{\sqrt{\log n}}$$

$$g_2(n) = 2^n$$

$$g_3(n) = n^{4/3}$$

$$g_4(n) = n(\log n)^3$$

$$g_5(n) = n^{\log n}$$

$$g_6(n) = 2^{2^n}$$

$$g_7(n) = 2^{n^2}$$

2. Using Stirling's formula prove that,

$$n! = o(n^n).$$

3. Problems 4-1 and 4-4 (pp. 85-86, CLRS).
4. Problem 5.2-5 (pp. 99, CLRS).
5. Problem 6-3 (pp 143, CLRS).