Homework Assignment for Week 02

1. Section 10.2: Problems 5, 31, 33, 61, 65, 71, 78.

2. Section 10.3: Problems 27, 31, 33, 37, 53, 55, 57(optional).

   Hint for problem 53: $?? \leq a_{2^n+1} + \cdots + a_{2^{n+1}} \leq ??$

   Hint for problem 57: Read the paragraph "Error Estimation" and Example 6 of Section 10.3.

3. Section 10.4: Problems 15, 16, 27, 29, 31, 43, 45, 51, 61, 62.

4. Section 10.5 (homework problems for next week, if you want to start early): Odd numbered problems in problem 17-43, 48, 53, 54.

5. Section 10.5: (optional, to answer a question raised in class) Take the following Stirling's formula for granted:
$$\lim_{n \to \infty} \frac{e^n n!}{n^n \sqrt{n}} = \sqrt{2\pi} \tag{1}$$

   You can easily find some readable proof via Google search if you are curious. Use (1) to determine whether $\displaystyle\sum_{n=1}^{\infty} \frac{(2n)!}{4^n n! n!}$ converges or not.