Homework 1
Algorithms Analysis and Design (501435-3)
Fall 2020
Due: Sunday October 4, 2020, 11:59 pm via Blackboard

- Show that $6n^2+8n+2$ is $O(n^2)$

- Show that $20n+6$ is $O(n)$

- Find the closed form for the following series:
    a) $1 + 2 + 3 + 5 + \ldots + n$
    b) $1 + x^2 + x^3 + \ldots + x^n$ where x is constant and $x > 1$
    c) $1 + x^2 + x^3 + \ldots + x^n$ where x is constant and $x < 1$
    d) $1 + (1/2) + (1/3) + \ldots + (1/n)$

- Use the iteration method to solve the recurrence

$$\mathbf{T(n) = 4T(n/2) + n^2}$$

- Exercise 4.3-1

- Exercise 4.3-2

- Exercise 4.3-3

- Exercise 4.3-9

- Exercise 4.4-1

- Exercise 4.4-2

- Exercise 4.4-4

- Exercise 4.4-6

- Exercise 4.5-1

- Exercise 4.5-3

- Exercise 4.5-4

- Problems 4-1

- Problems 4-3