**Homework 1  
Algorithms Analysis and Design (501435-3)  
Fall 2023  
Due: Saturday October 7, 2023, 11:59 pm via Blackboard (Firm deadlines)**

* Show that 6n2+8n+2 is O(n2)
* Show that 20*n*+6 is O(*n*)
* Find the closed form for the following series:

1. 1 + 2 + 3 + 5 + … + n
2. 1 + x2 + x3 + … + xn where x is constant and x > 1
3. 1 + x2 + x3 + … + xn where x is constant and x < 1
4. 1 + (1/2) + (1/3) + … + (1/n)

* Use the iteration method to solve the recurrence

**T(n) = 4T(n/2) + n2**

* 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