**CS 421 Midterm 1(100 pts, September 25, 2020)**

1. (25 pts)
2. Give the definition of
3. Is ? Why?
4. Is? Why?
5. (25 pts) The following code segment is given
6. Input: Integer n
7. sum=0;
8. **for**(i=1 to 2\*n)

4) **for**(j=1 to 2\*n)

5) sum=sum+1

1. What is input size?
2. Using sum , determine how many times line number 5 is executed.
3. Determine growth function.
4. Determine the complexity the code segment using growth function.
5. (25 pts) The following recursive algorithm is given

printLine(int n)

if (n=1)

print(n)

else

m=n/2

print(m)

PrintLine(m)

1. What is input size?
2. If t(n) is indicating number of integers printed, then determine recurrence relation of t(n)
3. Determine solution of t(n).
4. Determine complexity of the given algorithm.
5. (25 pts) Construct a AVL tree of height 3 with minimum number of vertices.