WIA2005 Algorithm Design & Analysis   
 Semester 2

Tutorial 2

1. a) Using the substitution method, find the time complexity of a recursive program   
 with the following recurrence relation:

T(n) = n2+ T (n-1); n>1

= 0 ; n= 0,1

b) Outline the time analysis of the following recursive programs using recursion tree method for

i) T(n) = 2T(n/2) + n2; where n>1

ii) T(n) = T(n/3) + T(2n/3) + n; where n>1

2. Using the master methods, solve the following recurrences:

a. T(n) = 2T(n/4) +1

b. T(n) = 2T (n/4) + √n

c. T(n) = 2T (n/4) + n

d. T(n) = 2T(n/4) + n2

e.

f.

g.

h.

i.

T (n) = 3T (n/2)+ n2  
 T (n) = 4T (n/2)+ n2   
T (n) = T (n/2) + 2n  
T (n) = 16T (n/4)+ n

T (n) = 2T (n/2)+ n log n