

CS320 WA2: Recurrences

Read the slides on logarithms in lecture 02_bigO. Demonstrate the three cases of the Master Theorem by solving the following three recurrence relations using the Master Theorem as well as repeated substitution:

1. $f_1=1$ $f_n = 2f_{n/2}+1$

Master Theorem: $a=$ $b=$ $d=$ $f(n)=O($ $)$

Now solve using repeated substitution:

2. $f_1=1$ $f_n = 2f_{n/2} + n^2$

Master Theorem: a= b= d= $f(n)=O($)

Now solve using repeated substitution:

3. $f_1=1$ $f_n = 3f_{n/3} + n$

Master Theorem: $a=$ $b=$ $d=$ $f(n)=O($ $)$

Now solve using repeated substitution: