Awad Nasir\_masterTheoremSolution

1. YES

T (n) = a \* T(n/b) + nc where n > 1, then for *n* a power of *b*, if

1. Logba < c, T (n) = Θ(nc);
2. Logba = c, T (n) = Θ(nc \* Log n);
3. Logba > c, T (n) = Θ(nlogba).
4. YES

T(n)=64 T(n/8) - n2log n

       =64 T(n/8) + n2log n-1

       =64 T(n/8) + n2log (1/n)

     here nlogba = n log864= n2

now,  n2log(1/n) > n2

Thencomplexity will be O( n2log 1/n)

1. NA
2. YES

In the recurrence relation T(n)=3T(n3)+n2T(n)=3T(n3)+n2

The last term n2n2 can be written as n⋅12n⋅12 aka n⋅cn⋅c cause 1212 is a constant.

From Masters Theorem:

nlog3(3)=1nlog3⁡(3)=1. So, n1=f(n)n1=f(n)

This resembles case 2 of masters theorem T(n)=θ(nlogbalog2n)T(n)=θ(nlogb⁡alog2⁡n)

thus, T(n)=θ(nlogn)

1. NA