1. T(n) = T(n-3) + 3lgn

Guess = T(n) = O(nlogn)

T(n) <= c(nlgn) - 3c + 3lgn (since c > 0)

T(n) <= cnlgn - 3c + 3lgn

T(n) <= cnlgn – 3c (Because 3lgn is a lower bound)

T(n) <= cnlgn (because T(n) has a negative number)

1. T(n) = 4T(n/3) + n

Guess = T(n) = O(n^log4 base3)

T(n) <= 4c(n/3)^(log4 base3 ) + n

T(n) <= 4c(n^(log4 base3) / 3^(log4 base3)) + n

T(n) <= 4c(n^log4 base3/4) + n

T(n) <= cn^log4 base3 + n

Because n is a lower bound:

T(n) <= cn^(log4 base3)

1. T(n) = T(n/2) + T(n/4) + T(n/8)

Guess = T(n) = O(n)

T(n) <= c(n/2) + c(n/4) + c(n/8)

T(n) <= cn(1/2 + 1/4 + 1/8)

T(n) <= cn(4+2+1/8) = cn(7/8)

Because 7/8 is less than 1

T(n) <= cn

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

Guess = T(n) = O(n^2)

T(n) <= 4c(n/2)^2 + n^2

T(n) <= 4c(n^2/4) + n^2

T(n) <= cn^2 + n^2

Because T(n) has a n^2 which will be positive for all -ve and +ve no

So , T(n) >= cn^2

My new guess is T(n)= cn^2-c’n

T(n)< = 4c(n/2^2 – c’/2) + n^2

T(n) <= 4c(n^2/4 – c’/2) + n^2

T(n) <= cn^2 – 2c’ + n^2

T(n) <= cn^2 -2n(1-n)

Because T(n) has negative value -2n(1-n)

T(n) <= cn^2