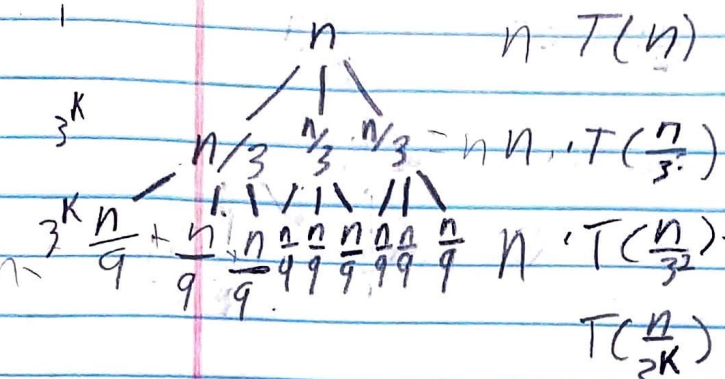
1. $T(n) = 3T(n/3) + n$



$1 = \frac{n}{3^K} \rightarrow n\log_3 n = K$

Sub Method

$T(n) = 3T(\frac{n}{3}) + n$

$3cn/3 \log(\frac{n}{2}) + n$

$cn \log n - cn \log 2 + n$

$cn \log n - cn + n$

$cn \log n =$

2. $2T(n/4) + 1$

$a = 2$ $n^{\log_4 2} = n^{0.5}$

$b = 4$

$f(n) = 1 = n^0$

According to the master thm
The answer is $\Theta(n^{0.5}) = T(n)$

2. $2T(n/4) + \sqrt{n}$

$a = 2$ $n^{\log_4 2} = n^{0.5}$

$b = 4$

$f(n) = \sqrt{n} = n^{\frac{1}{2}}$

According to the Master Thm
$T(n) = \Theta(n^{0.5} \log(n^{0.5}))$

2. $2T(n/4) + n$

$a = 2$ $n^{\log_4 2} = n^{0.5}$

$b = 4$

$f(n) = n = n^1$

According to the master Thm
$T(n) = \Theta(n)$

2. $2T(n/4) + n^2$

$a = 2$ $n^{\log_4 2} = n^{0.5}$

$b = 4$

$f(n) = n^2$

According to the Master Thm
$T(n) = \Theta(n^2)$