Topics to discuss

Solve $T(n) = \begin{cases} T(\frac{n}{3}) + T(\frac{2n}{3}) + n & , n > 1 \\ 1 & , n = 1 \end{cases}$

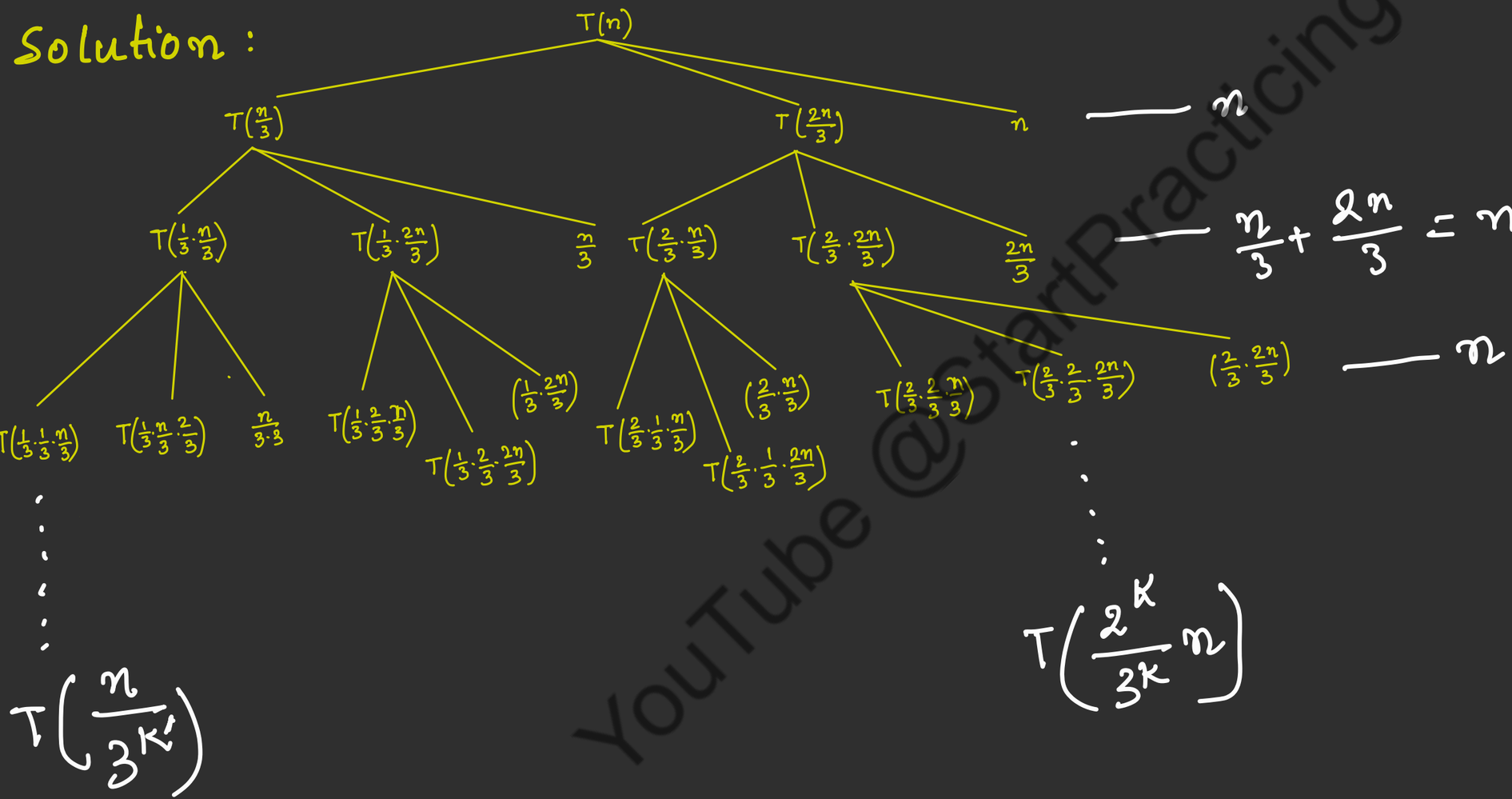
by Recursion Tree Method

Solve $T(n) = \begin{cases} T(\frac{n}{3}) + T(\frac{2n}{3}) + n & , n > 1 \\ 1 & , n = 1 \end{cases}$

$T(n) = 1 \;, n = 1$

$T(1) = 1$

Solution :



assume, $\frac{2^{Kn}}{3^K} = 1$

$\Rightarrow \frac{n}{\left(\frac{3}{2}\right)^K} = 1$

$\Rightarrow n = \left(\frac{3}{2}\right)^K$

$\Rightarrow \log n = K \log \frac{3}{2}$

$\Rightarrow K = \frac{\log_2 n}{\log_2 \frac{3}{2}}$

$\Rightarrow K = \log_{3/2} n$

change of base rule, $\log_b^a = \frac{\log_c^a}{\log_c^b}$

$T.C = O(nK)$

$= O(n \log_{3/2} n)$

Follow Now

Start Practicing

i._am._arfin

Arfin Parween