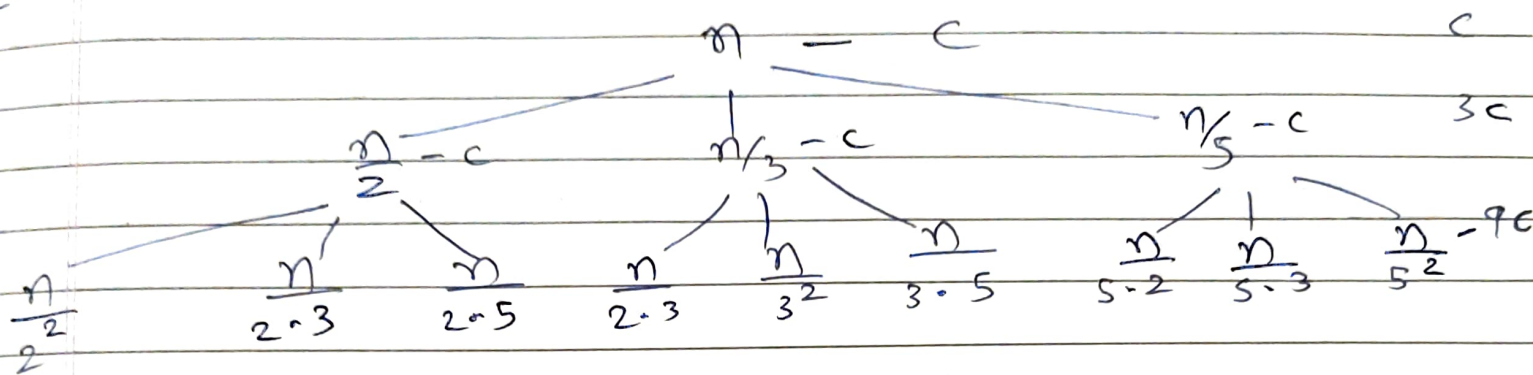


ex $T(n) = T\left(\frac{n}{2}\right) + T\left(\frac{n}{3}\right) + T\left(\frac{n}{5}\right) + c$



left

Middle

Right

constant

$$\frac{n}{2^k} = 1$$

$$\frac{n}{3^k} = 1$$

$$\frac{n}{5^k} = 1$$

$$k = \log_2 n$$

$$k = \log_3 n$$

$$k = \log_5 n$$

↑ Greater

for constants

$$= (3)^0 c + (3)^1 c + (3)^2 c + \dots + (3)^k c$$

$$= c (3^0 + 3^1 + 3^2 + \dots + 3^{\log_2 n}) \rightarrow \text{GP series.}$$

where $r = 3$, $a = 3$, $r > 1$

Property 1

$$\text{Sum} = a \frac{(r^n - 1)}{r - 1} = c \left(\frac{3^{\log_2 n} - 1}{3 - 1} \right)$$

$$= c \left(\frac{n^{\log_2 3} - 1}{2} \right)$$

$$O(n^{1.5})$$

$$\Leftarrow = n^{1.5}$$