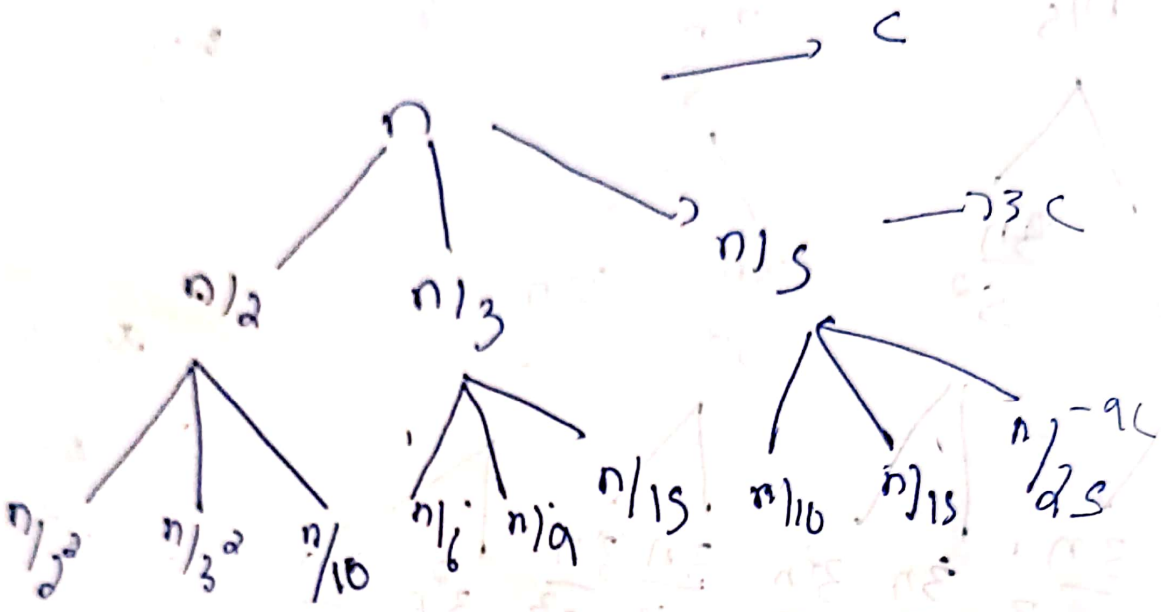
2) Assignment 3

$$T(n) = T(n/2) + T(n/3) + T(n/5) + c$$



$\frac{n}{2^k} = 1$ $\quad \frac{n}{3^k} = 1$ $\quad \frac{n}{5^k} = 1$

$n = 2^k$

$\log_2 n = k$, $n = 3^k$, $n = 5^k$

$\log_3 n = k$ $\quad \log_5 n = k$

$\log_2 n = k \rightarrow$

$\Rightarrow (3)^0 c + (3)^1 c + (3)^2 c + \ldots + (3)^k c$

$\Rightarrow c\left((3)^0 + (3)^1 + (3)^2 + \ldots + (3)^{\log_2 n}\right)$

$= r = 3$

$a = 1$

$$S = \frac{a(r^n - 1)}{r - 1}$$

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

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

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