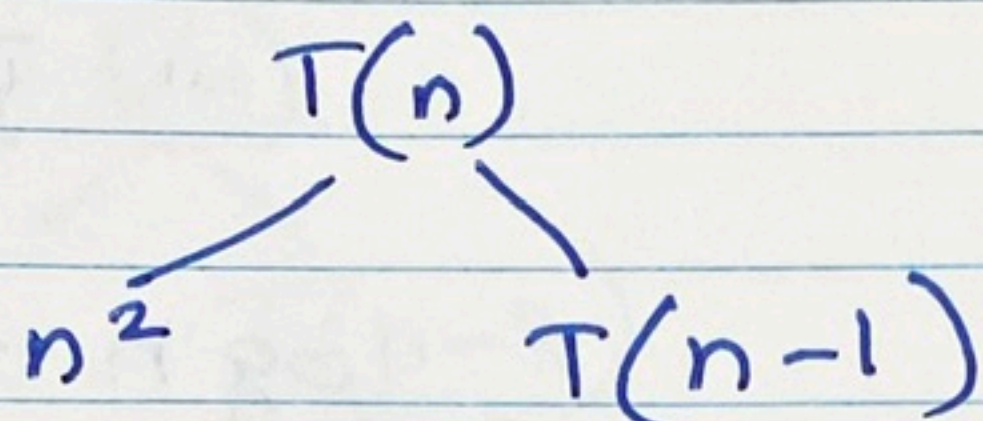


Eq) $T(n) = \begin{cases} T(n-1) + n^2 & , n > 0 \\ 1 & , n = 0 \end{cases}$

level = 0

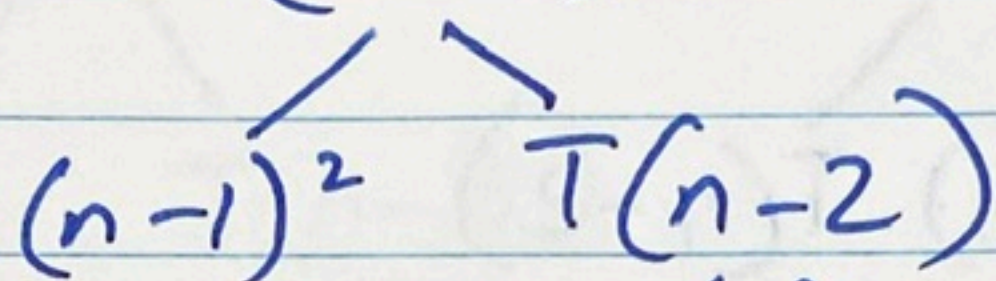
Time Taken.

1



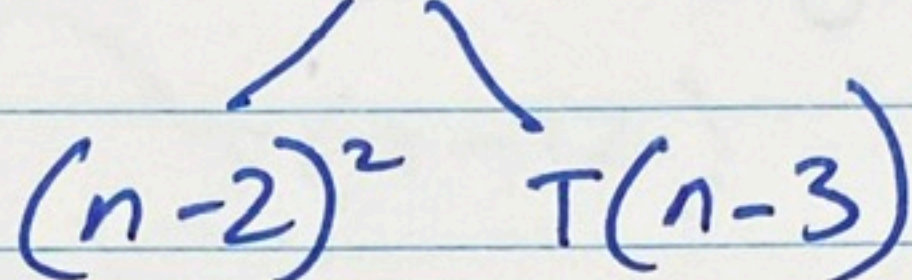
$n^2 + ?$

2



$(n-1)^2 + ?$

3



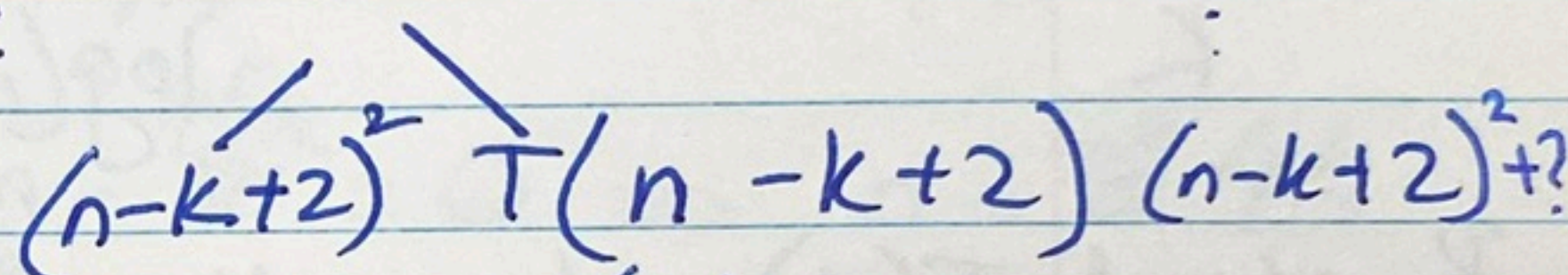
$(n-2)^2 + ?$

⋮

⋮

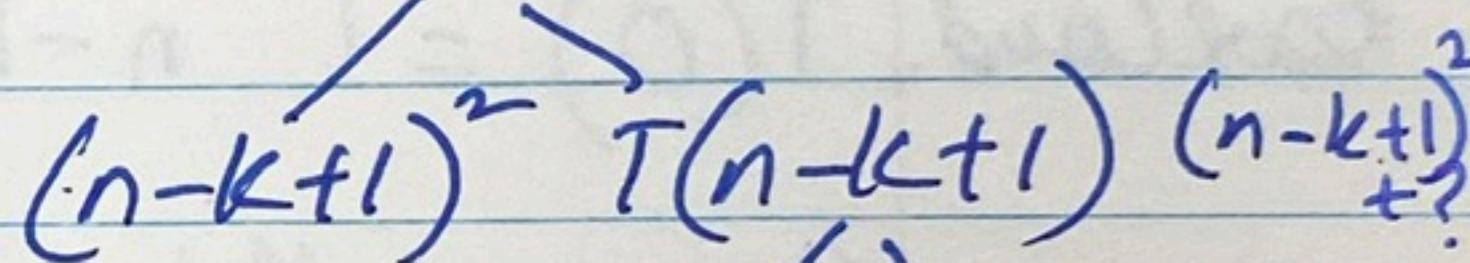
⋮

k-2



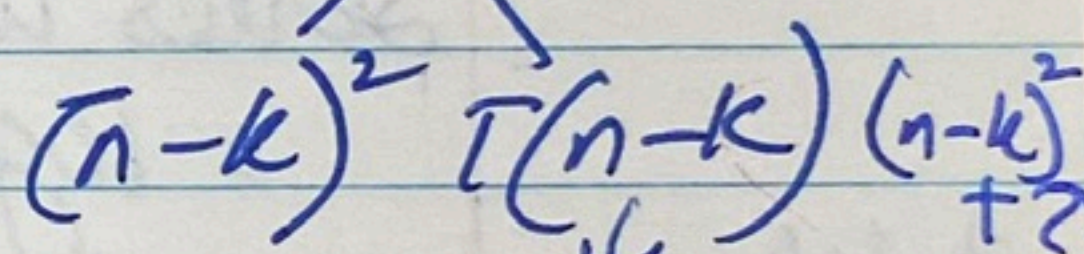
$(n-k+2)^2 + ?$

k-1



$(n-k+1)^2 + ?$

k



$(n-k)^2 + ?$

Base cond $T(0) = 1 \therefore T(n-k) = 0$

$k = n$

Series will be:

$$= n^2 + (n-1)^2 + (n-2)^2 + \dots + (n-k+2)^2 + (n-k+1)^2 + (n-k)^2$$

$$= n^2 + (n-1)^2 + (n-2)^2 + \dots + 2^2 + 1^2 + 0^2$$

Sub k

$$\Sigma = \frac{n(n+1)(2n+1)}{6}$$

$$= \frac{n^3}{3} + \frac{n^2}{2} + \frac{n}{6} + n$$

Dominant term

$$\therefore \boxed{O(n^3)}$$

Hilroy