① $(\sqrt{n} + 2)(n + 5) =$

$= \sqrt{n} \cdot n + 5\sqrt{n} + 2n + 10 =$

$O(\sqrt{n} \cdot n)$

$\boxed{res \rightarrow 2}$

② $n = 5$

5	①
4	②
3	③
2	④
1	⑤

$\boxed{\sum_{i=1}^{n} cte}$

$\boxed{res \rightarrow 4}$

③ $n \cdot c$ $\boxed{res \rightarrow 4}$

④ $T(n) = a + T(n-3)$ $\boxed{res \rightarrow 4}$

⑤ $\boxed{2T(\underbrace{n-2}_{n-1-1}) + n - 1}$ $\boxed{res \rightarrow 5}$

⑥ $T(n) \begin{cases} cte & n = 0 \\ 2T(n-1) + cte & n > 0 \end{cases}$

suponiendo que $n > 0$

paso ① $2T(n-1) + cte$

paso ② $2[2T(n-2) + cte] + cte =$

$= 4T(n-2) + 3\,cte$

paso ③ $4[2T(n-3) + cte]\; 3\,cte =$

$= 8T(n-3) + 7\,cte$

paso ⓘ $2^i\, T(n-i) + (2^i - 1).cte$

caso base $(n-i) = 0$

$n = i$

reemplazo i

$2^n\, T(n-n) + (2^n - 1).cte2 =$

$= 2^n \cdot T(0) + (2^n - 1).cte2 =$

$= 2^n .cte_1 + 2^n.cte2 - cte2 = T(n)$

$O(2^n) \Rightarrow$ Res 1

⑦ Res $\rightarrow$ 2 $c1, \log(n), n\log(n), n^5$

⑧

$$T(n) = \begin{cases} 1 & si\ n = 1 \\ 16T(n/2) + n^4 & si\ n \geq 2 \end{cases}$$

paso ① $16T\left(\frac{n}{2}\right) + n^4$

paso (2) $16\ T\left[16\ T\left(\frac{n}{4}\right) + \left(\frac{n}{2}\right)^4\right] + n^4 =$

$= 256\ T\left(\frac{n}{4}\right) + \cancel{16}\ \frac{n^4}{\cancel{16}} + n^4 =$

$= 256\ T\left(\frac{n}{4}\right) + 2n^4$

paso (i) $16^i\ T\left(\frac{n}{2^i}\right) + i\,n^4$

caso base

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

$n = 2^i$

$\log_2(n) = i$

$16^i = (2^4)^i$

$= (2^i)^4 =$

$= \boxed{n^4}$

reemplazo

$n^4\ T\left(\frac{n}{2^{\log_2(n)}}\right) + \log_2(n) \cdot n^4 =$

$= n^4 \cdot T(1) + \log_2(n) \cdot n^4 =$

$= n^4 \cdot 1 + \log_2(n) \cdot n4$

$O\left(\log_2(n) \cdot n^4\right)$ res $\rightarrow$ c

Escaneado con CamScanner

(9)

TIEMPO while si $n = 8$

1	$j = 1$	$\boxed{4}$
2	$j = 2$	
3	$j = 4$	
i	$j = 2^{i-1}$	

caso base

$$2^{i-1} > n$$

$$i-1 > \log 2(n)$$

$$\sum_{i=1}^{\log 2(n)}$$

FOR

$n = 2$

1	$4 = n*n$	4
2	$3 = n*n - 1$	
3	$2 = n*n - 2$	
i	$n*n - (i-1)$	

caso base

$$n*n - i + 1 < 1$$

$$n*n + 1 < 1 + i$$

$$n*n + \cancel{1} \cancel{-1} < i$$

$$n*n < i$$

$$\sum_{i=1}^{n*n}$$

$$T(n) = \sum_{i=1}^{\log 2(n)} \left(\sum_{j=1}^{n \cdot n} 1 \right) =$$

$$= \sum_{i=1}^{\log 2(n)} n^2 = \boxed{\log 2(n) \cdot n^2}$$

res $\rightarrow$ d

10) $$T(n) = \sum_{i=1}^{2} \left(\sum_{J=1}^{\log 2(n)} 1 \right) =$$

$$= \sum_{i=1}^{2} \log 2(n) = 2 \log 2(n)$$

$n = 1024$

$T(1024) = 20$

1.000 —— 1seg

20 —— 0,02 seg

$\boxed{\text{RES} \rightarrow \text{C}}$