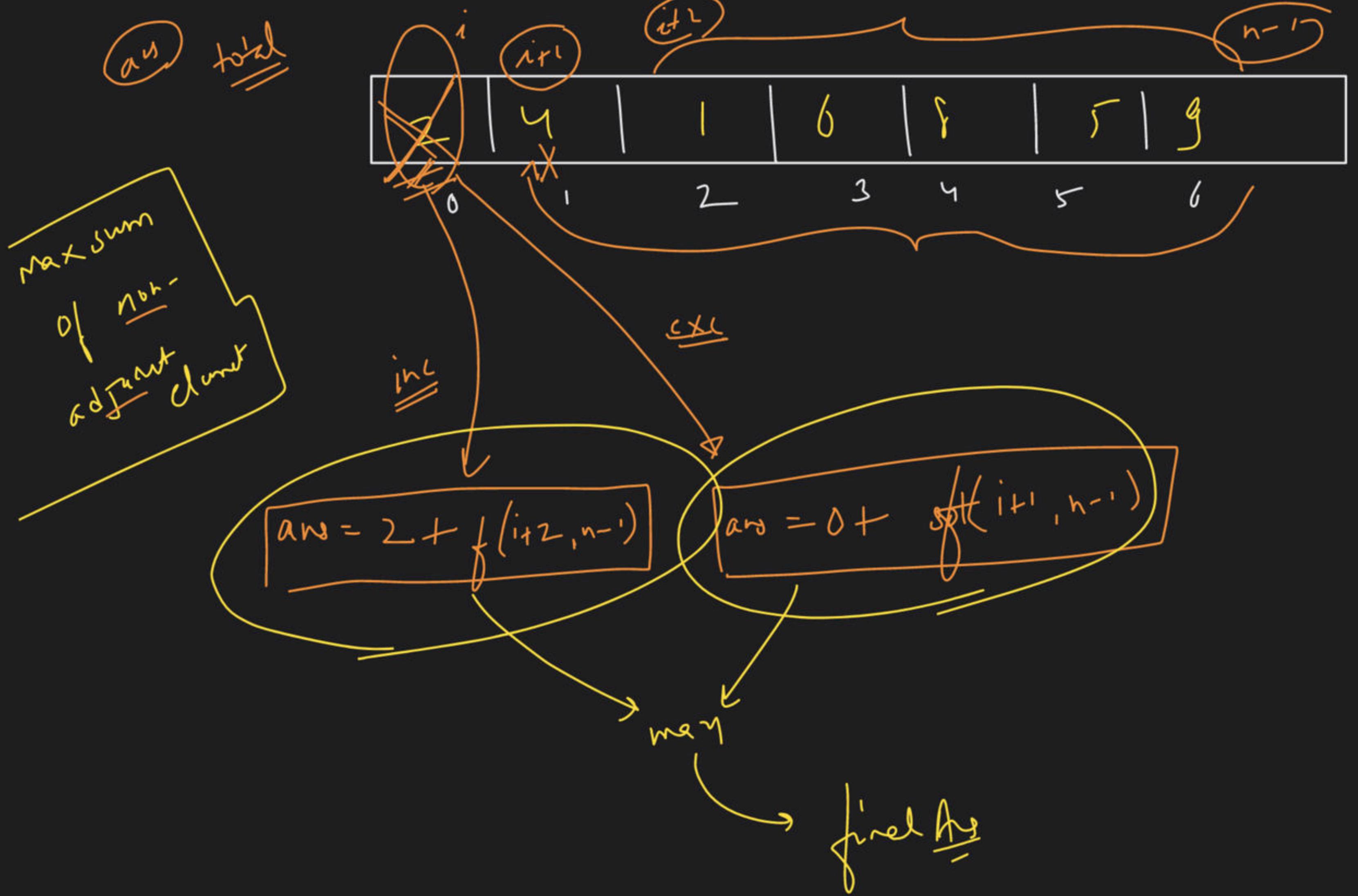




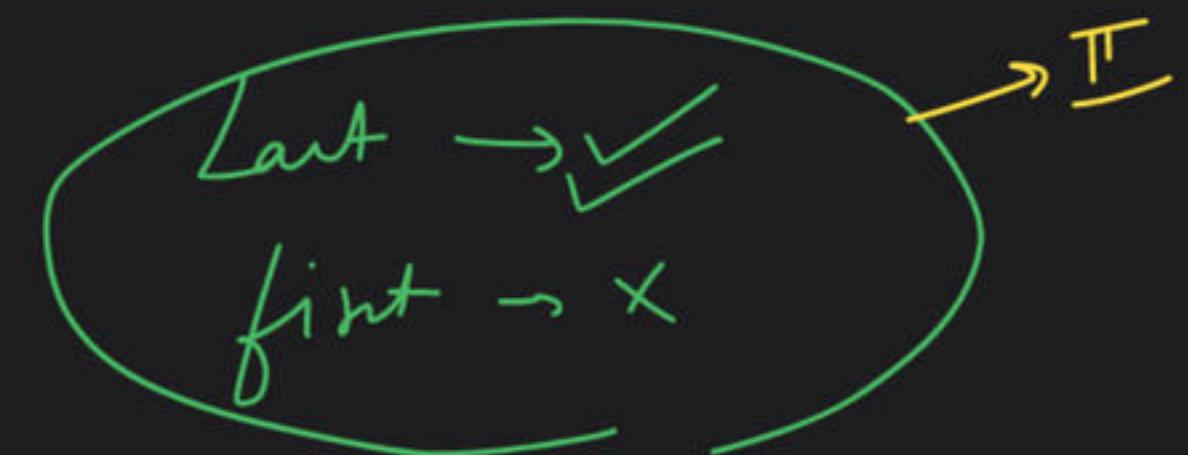
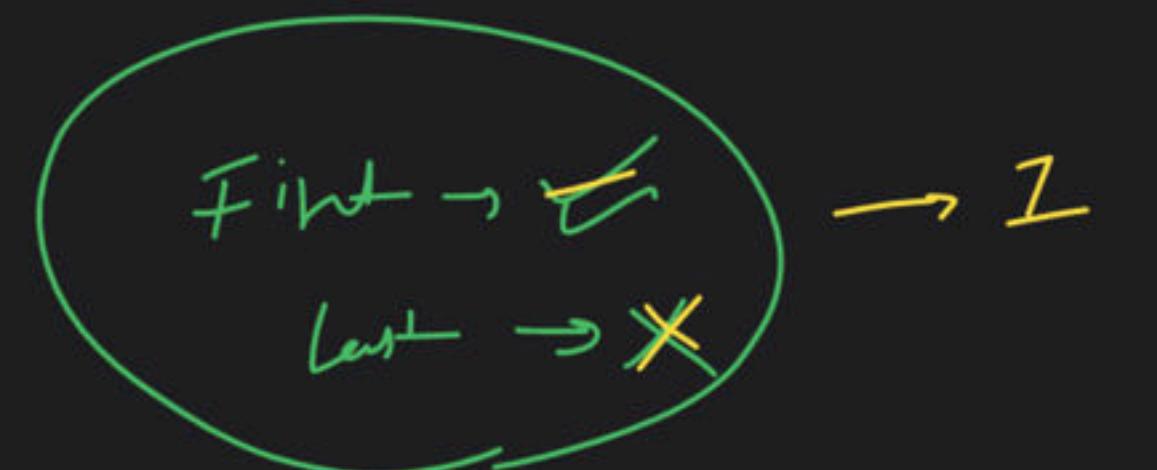
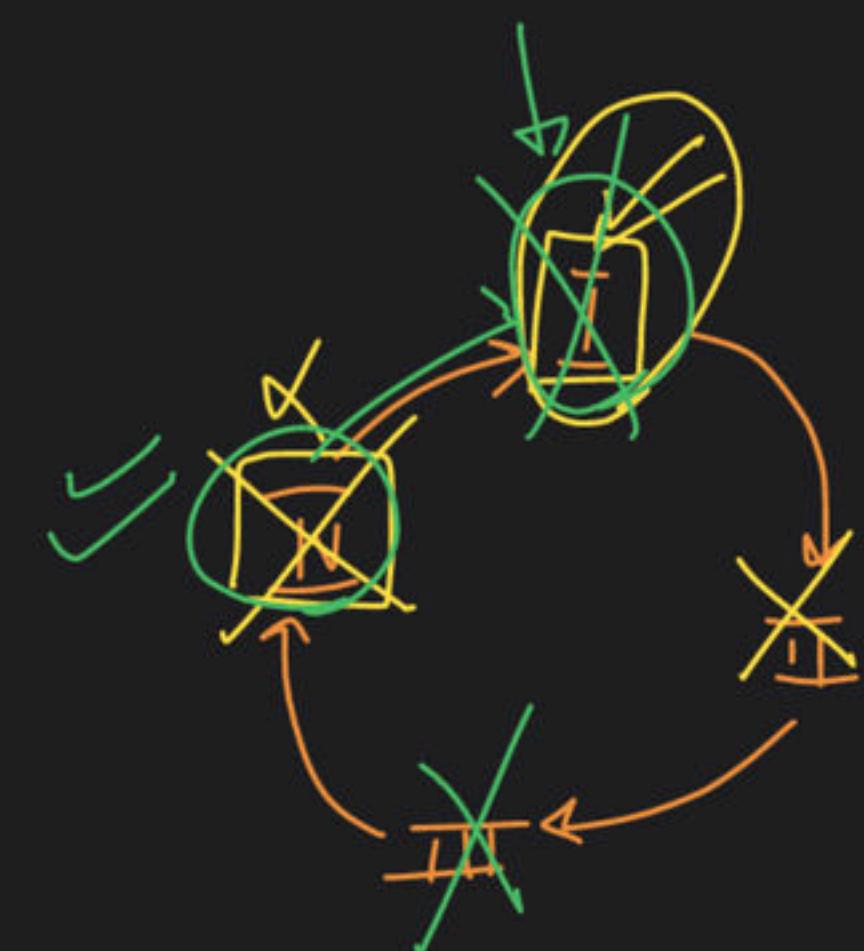
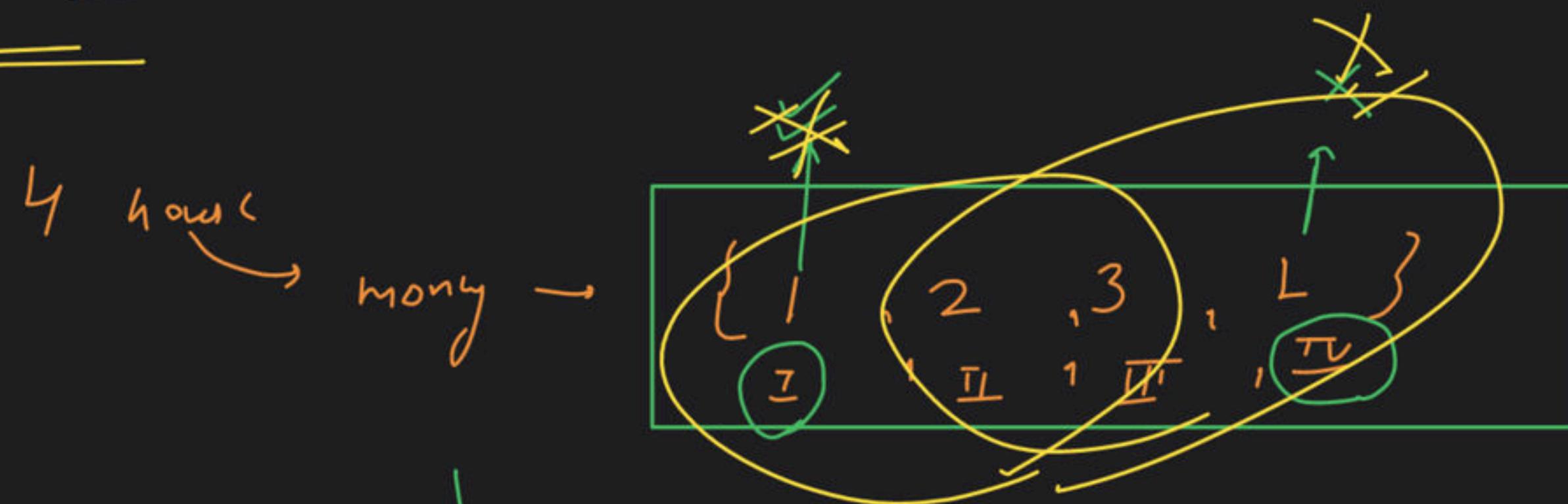
# Recursion Marathon [Extra Class]

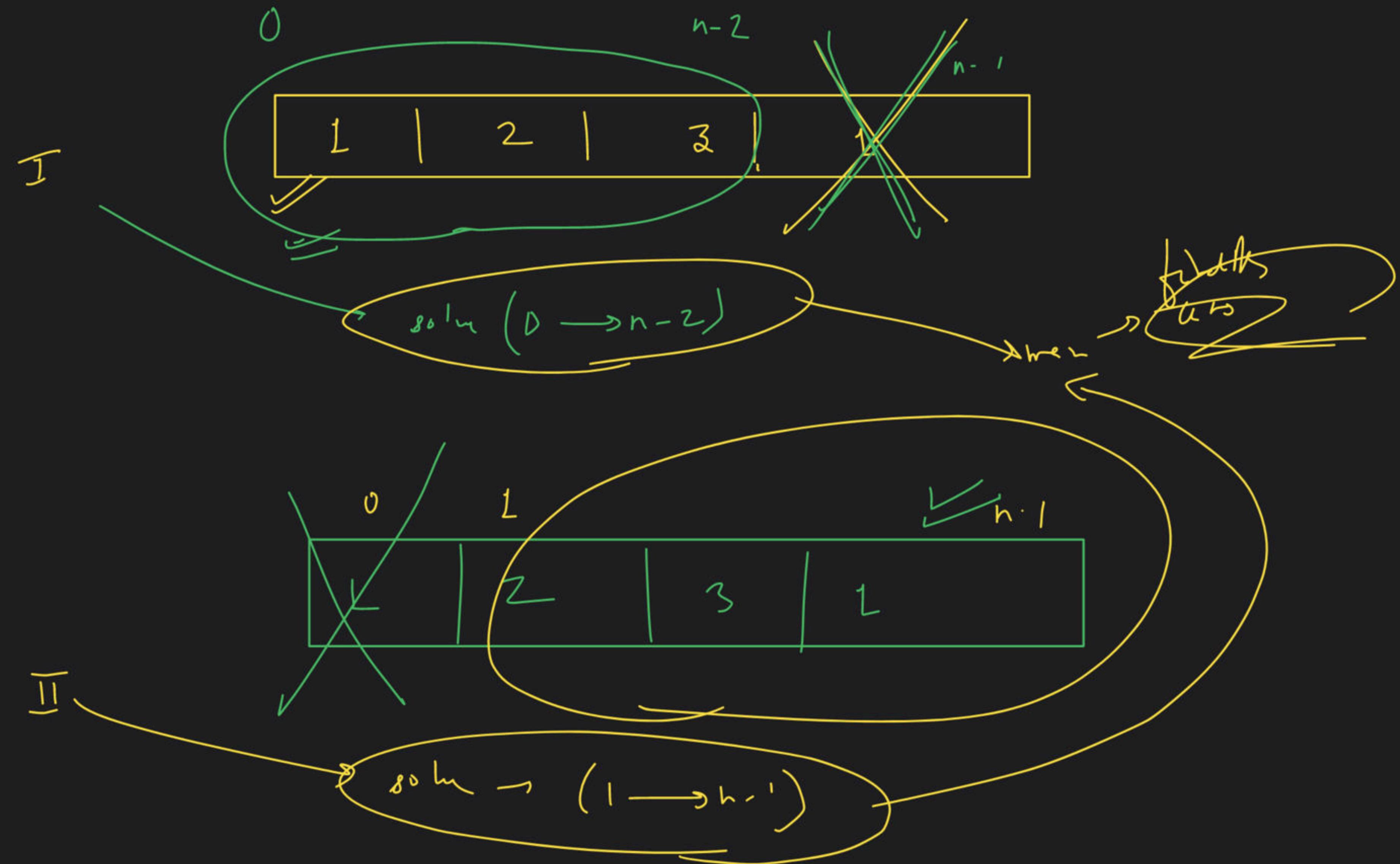
## [Join Here]

Special class

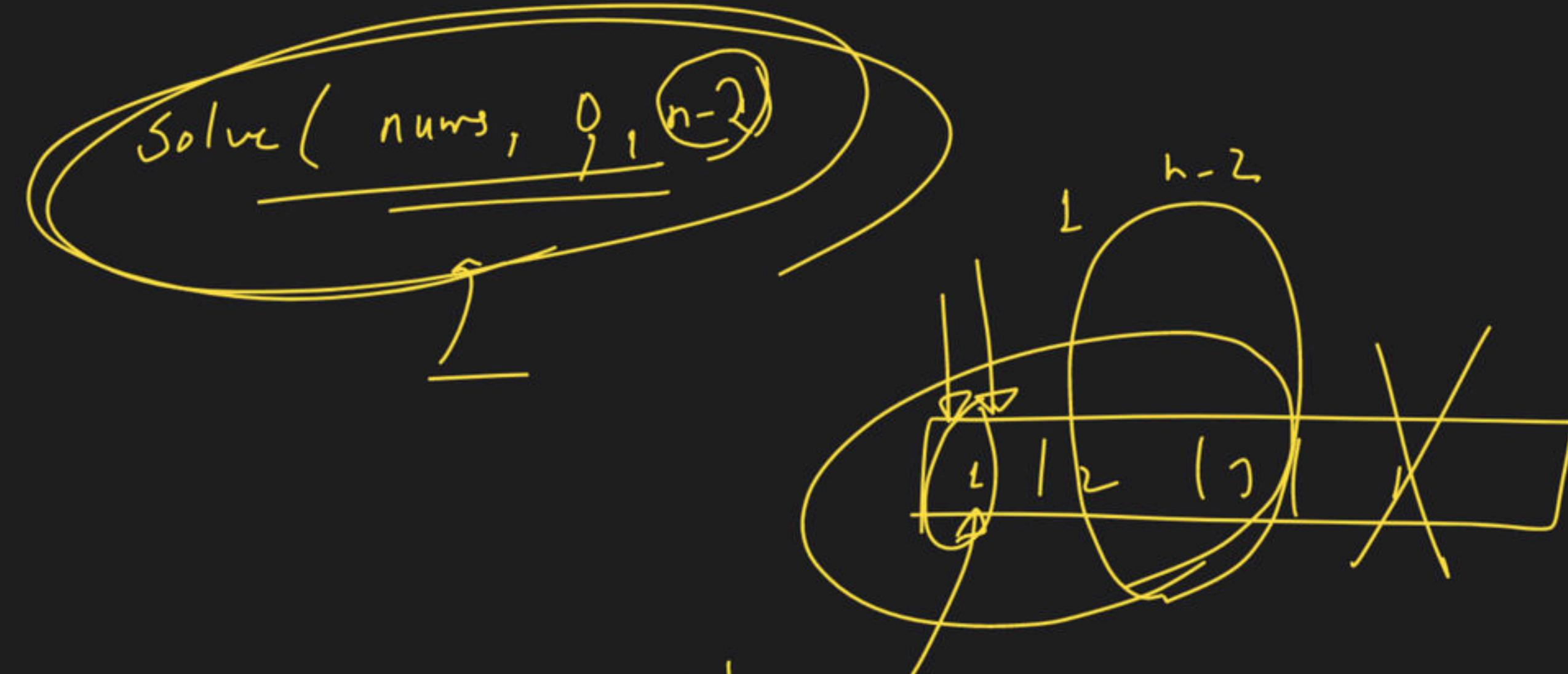


# → House Robber II

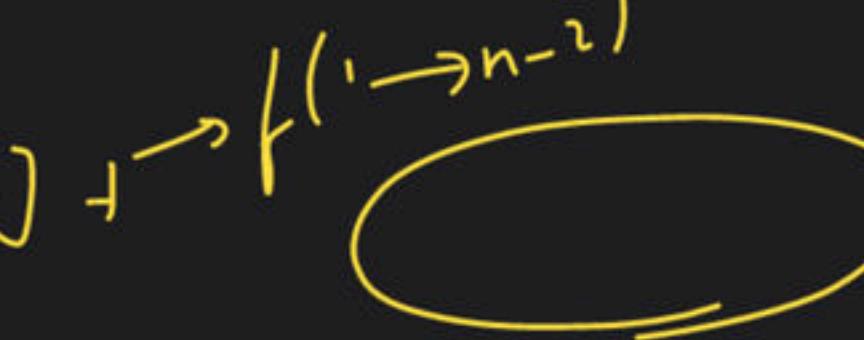




option 1 =  $\text{Solve}(\text{nums}, 0, n-2)$

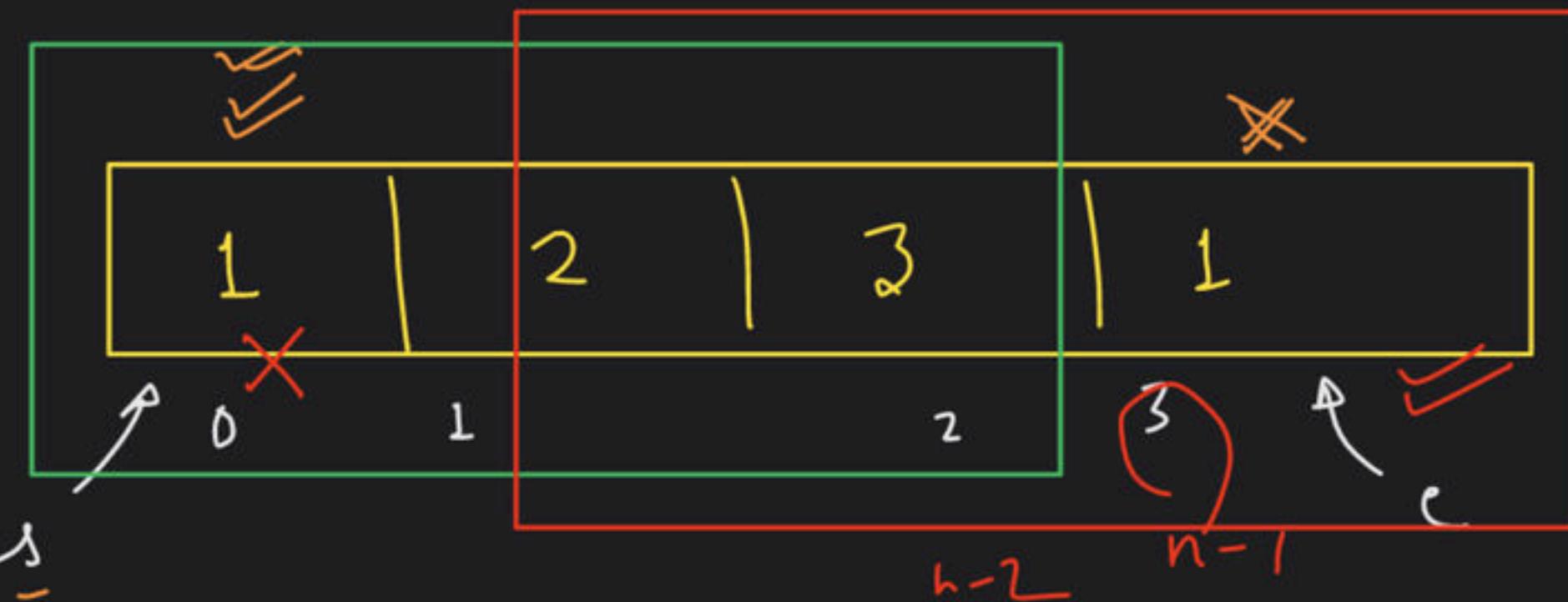


option 1 =  $\text{nums}[0] \rightarrow f(1 \rightarrow n-2)$



option 2 =  $\text{nums}[n-1] + f(1 \rightarrow n-2)$

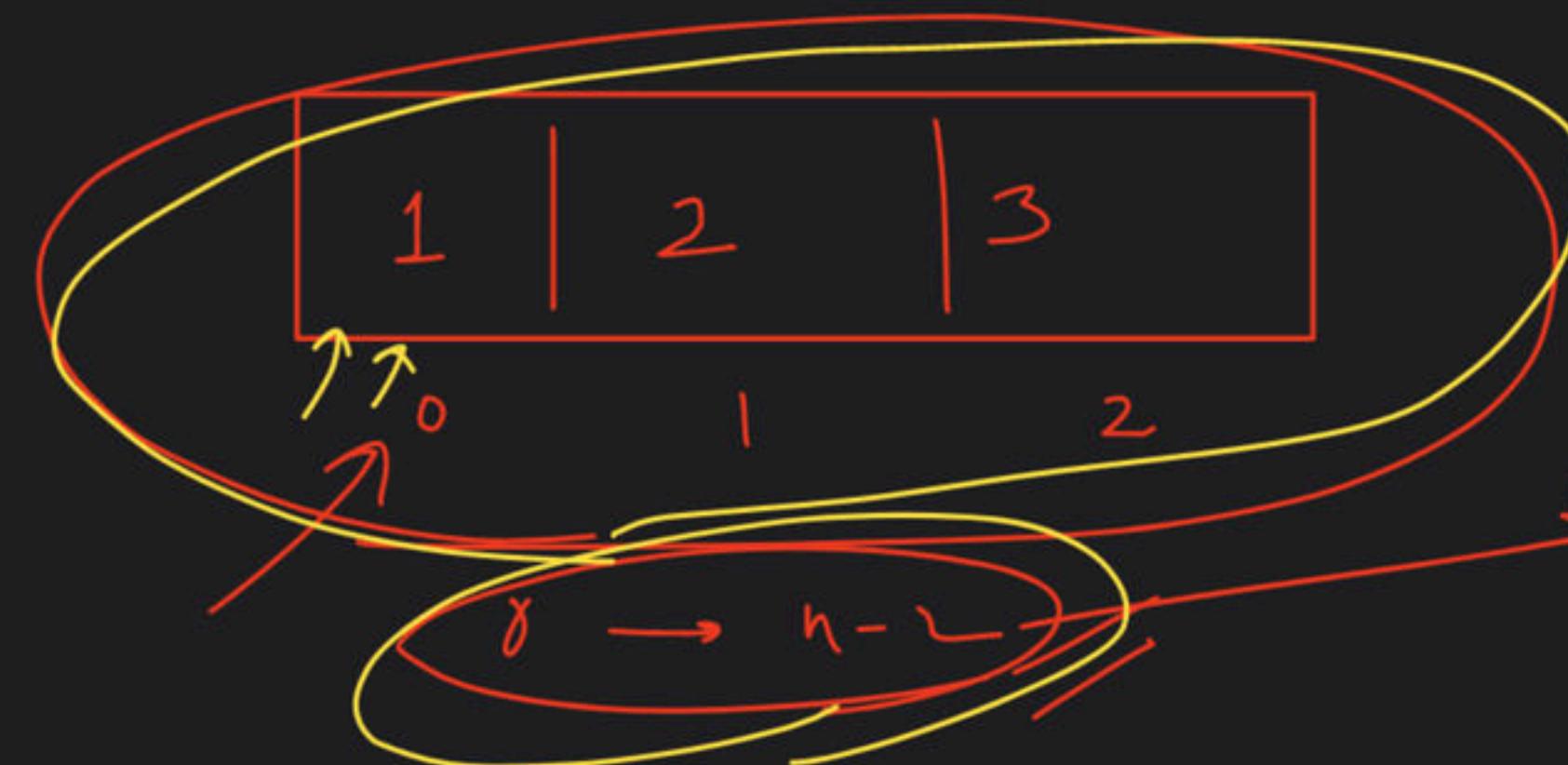




first hour  $\rightarrow$  rob



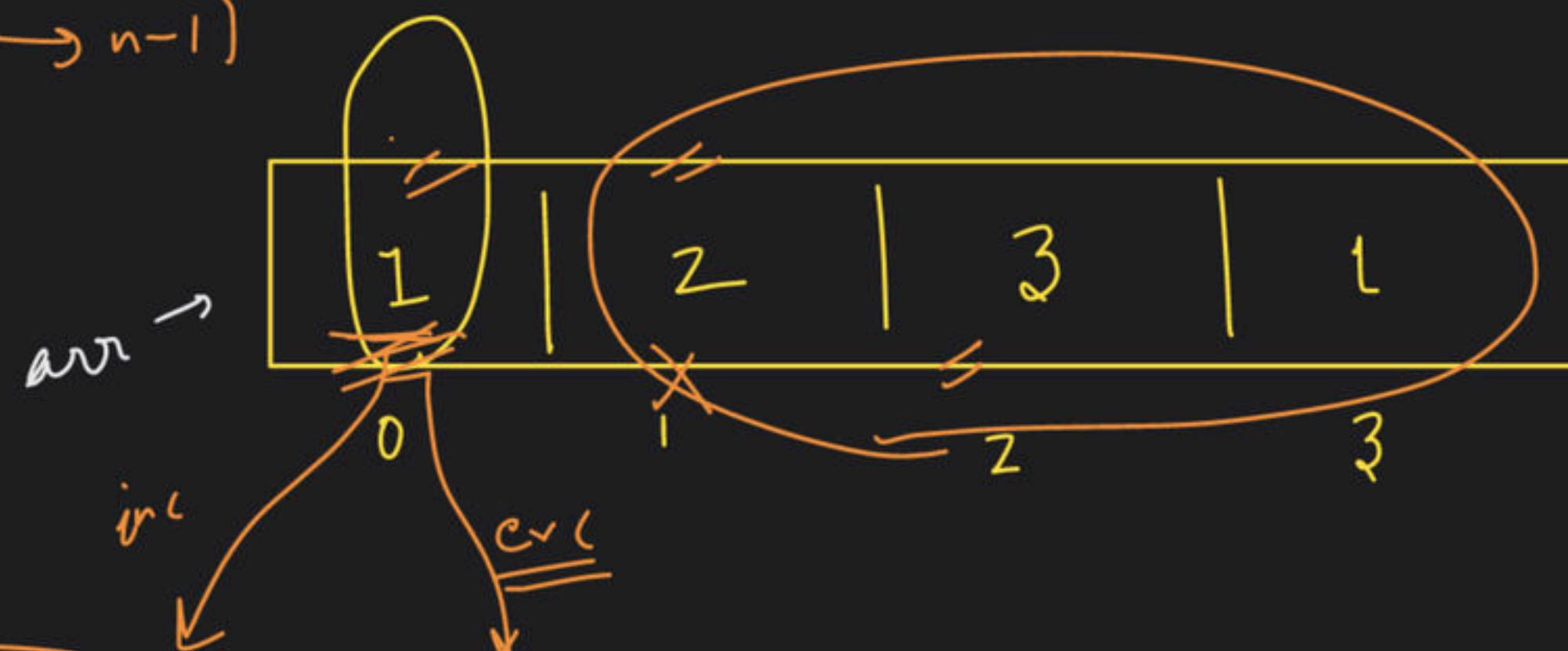
Last hour  $\rightarrow$  rob



man



$f(0 \rightarrow n-1)$



$$a_{10} = 1 + f(1 \rightarrow n-1)$$

$$a_{11} = 0 + (0+1, n-1)$$

option = nums[::]

+

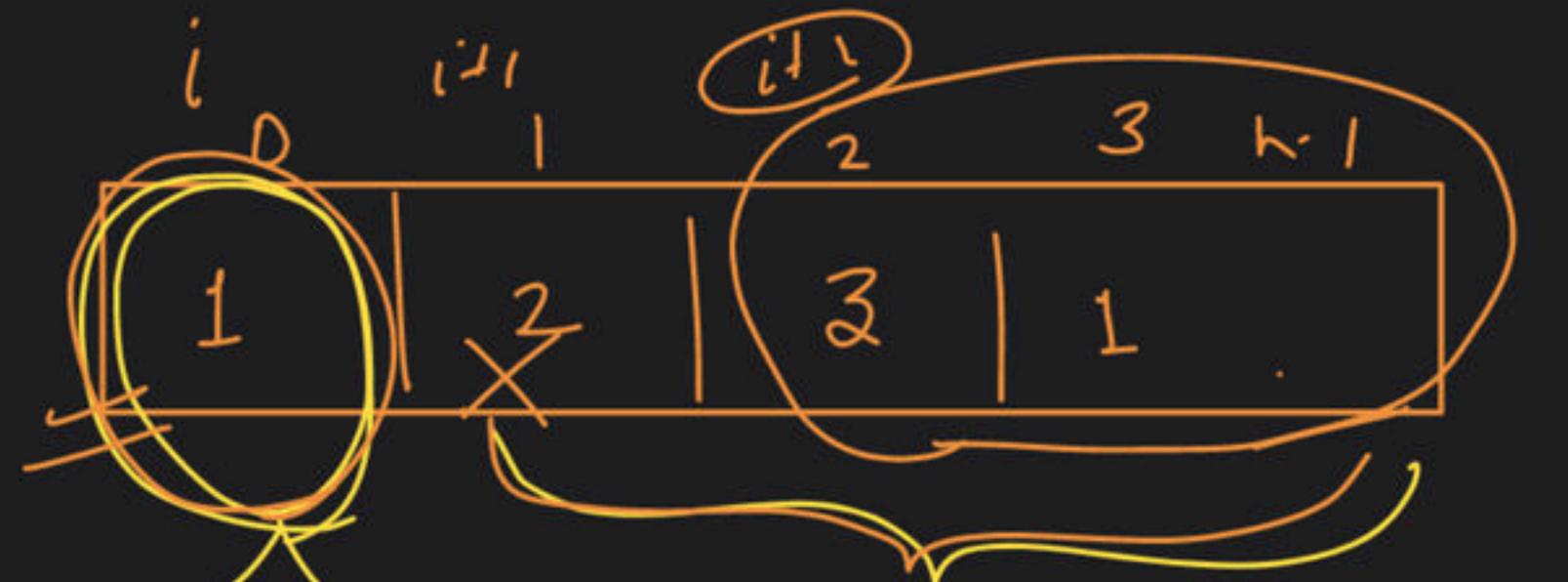
$f(i+2 \rightarrow n-1)$

option  $\rightarrow$  0

+

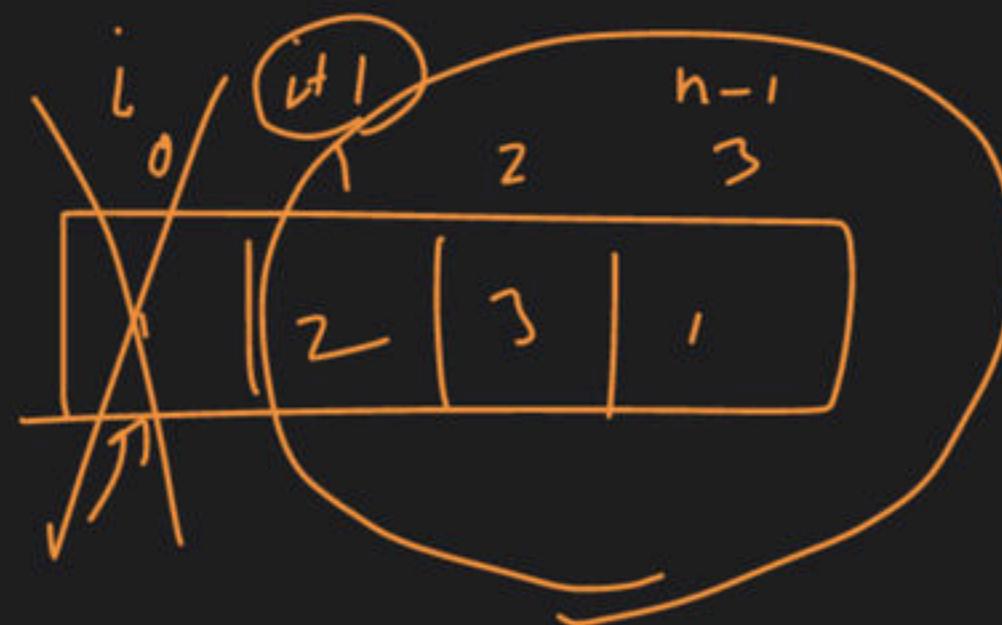
$f(i+1 \rightarrow n-1)$

man  $\rightarrow$  find Ay



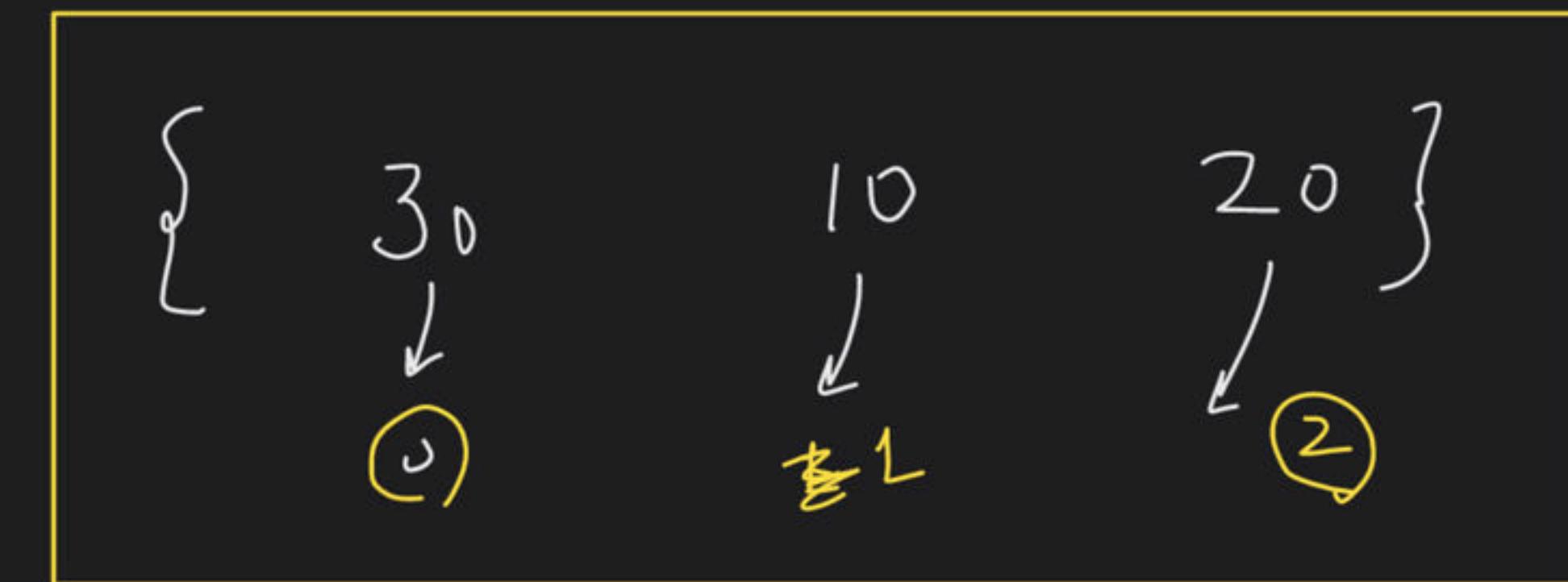
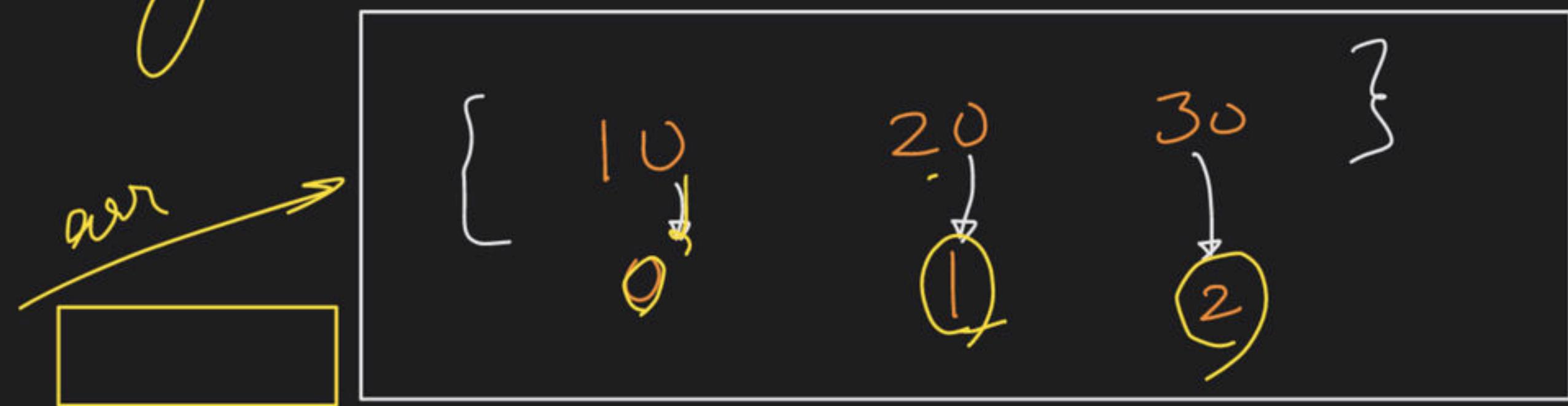
$$ans = 1 + f(i+2 \rightarrow n-1)$$

$$ans = 0 + f(i+1 \rightarrow h-1)$$



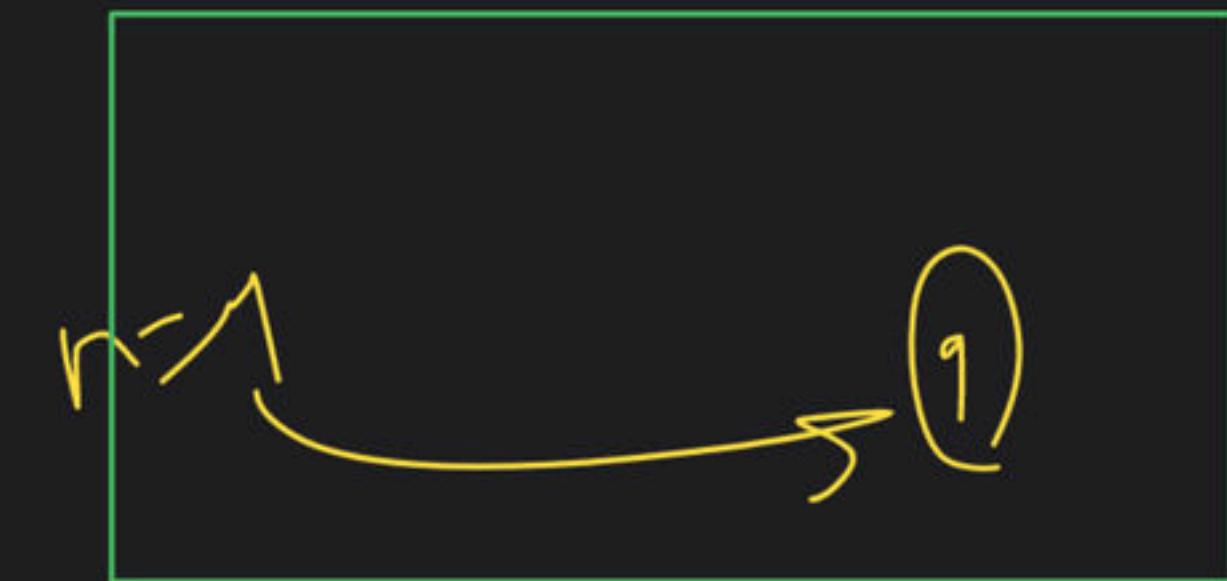
max

$\rightarrow$  Count de arrangement  
~~of~~



Catalan no

$$n = \cancel{\{1\}}$$



0, 1, 2, 3, ...

$$n = 1$$

$$\begin{matrix} \{ & 1 \} \\ \downarrow & \end{matrix} \rightarrow 0$$

$$n = 2$$

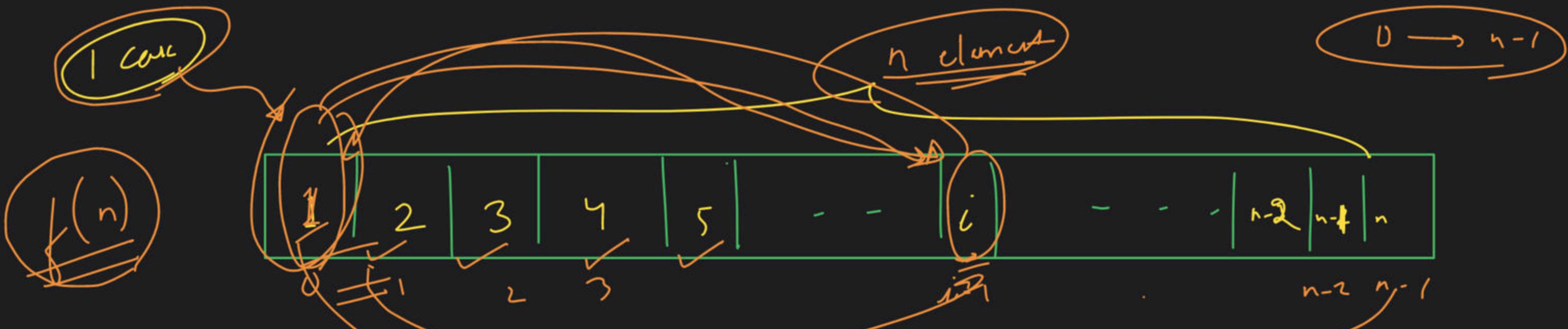
$$\begin{matrix} \{ & 1, 2 \} \\ \overline{\swarrow \searrow} \end{matrix}$$

$$\{ 2, 1 \} \rightarrow 1$$

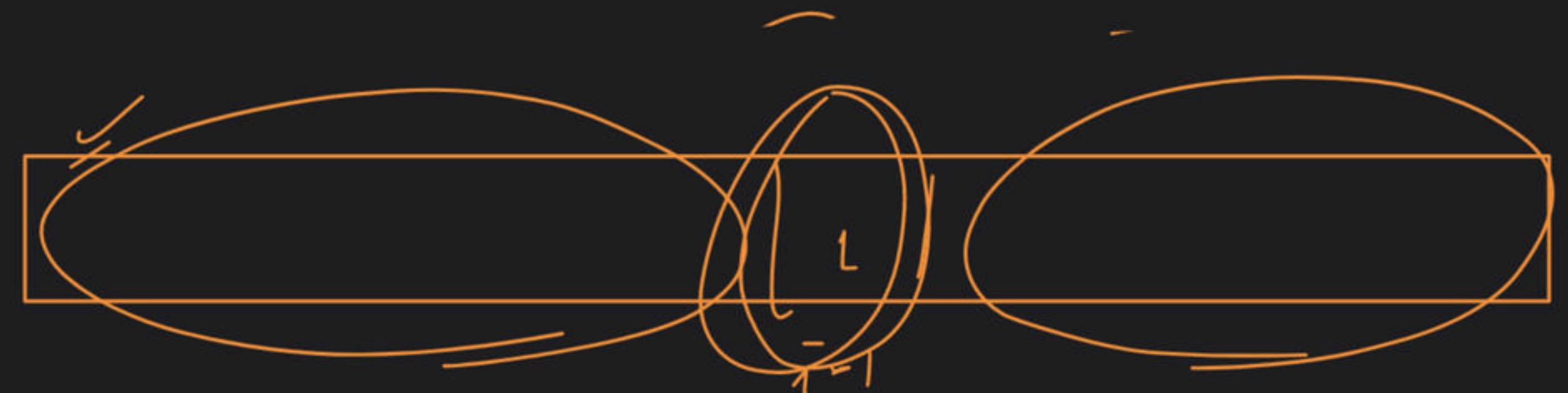
$$n = 3$$

$$\{ 1, 2, 3 \}$$

$$\begin{matrix} \{ 3, 1, 2 \} \\ \swarrow \quad \searrow \\ \{ 2, 3, 1 \} \end{matrix} \xrightarrow{?} 2$$



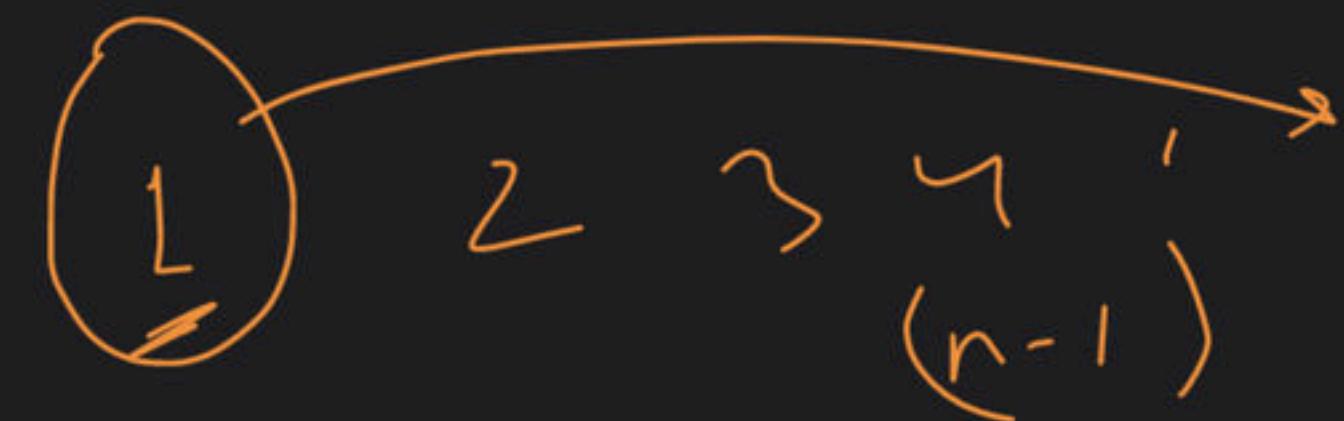
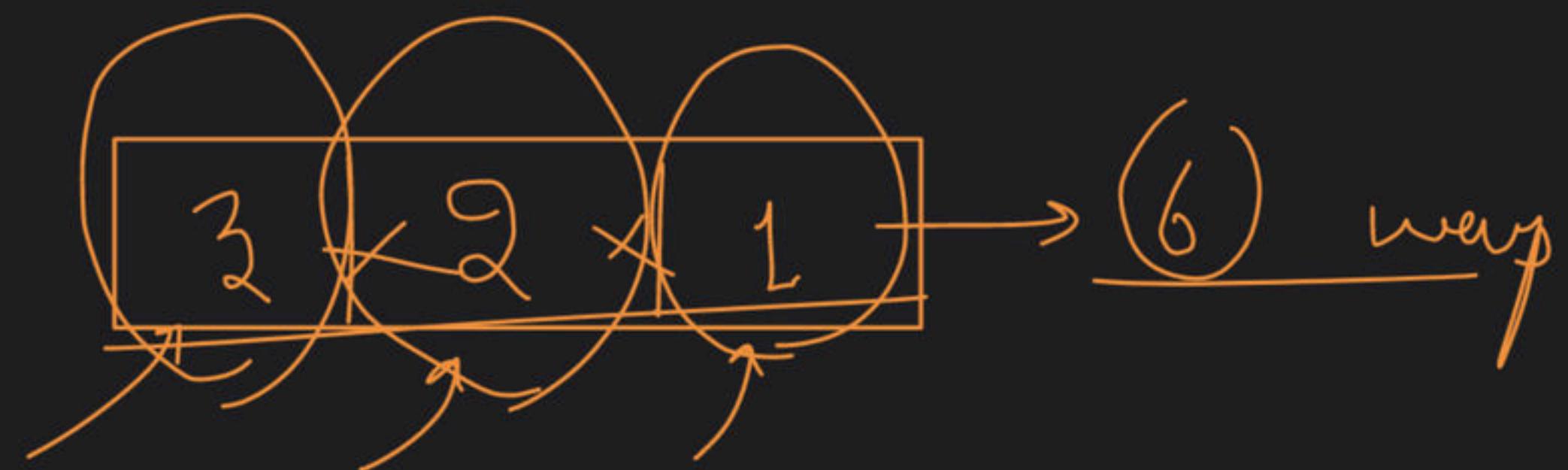
$$(n-1) \star \left[ f(n-2) + f(n-1) \right]$$



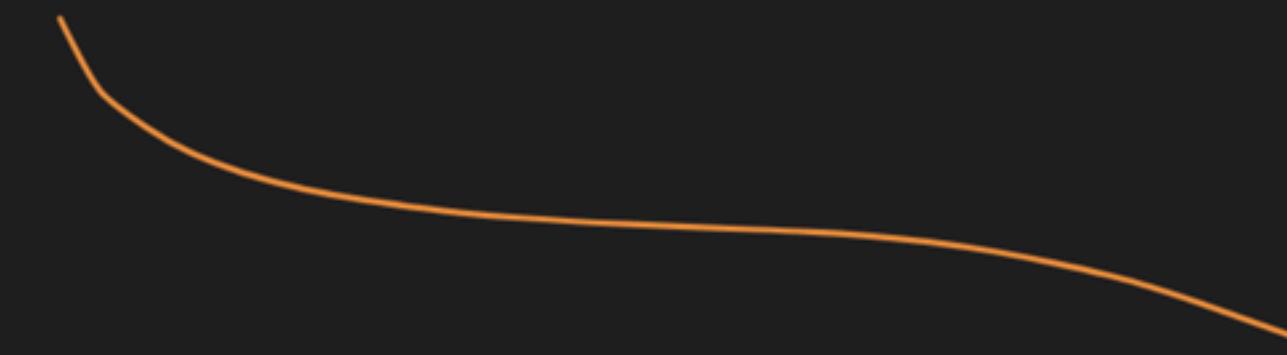
~~- X~~

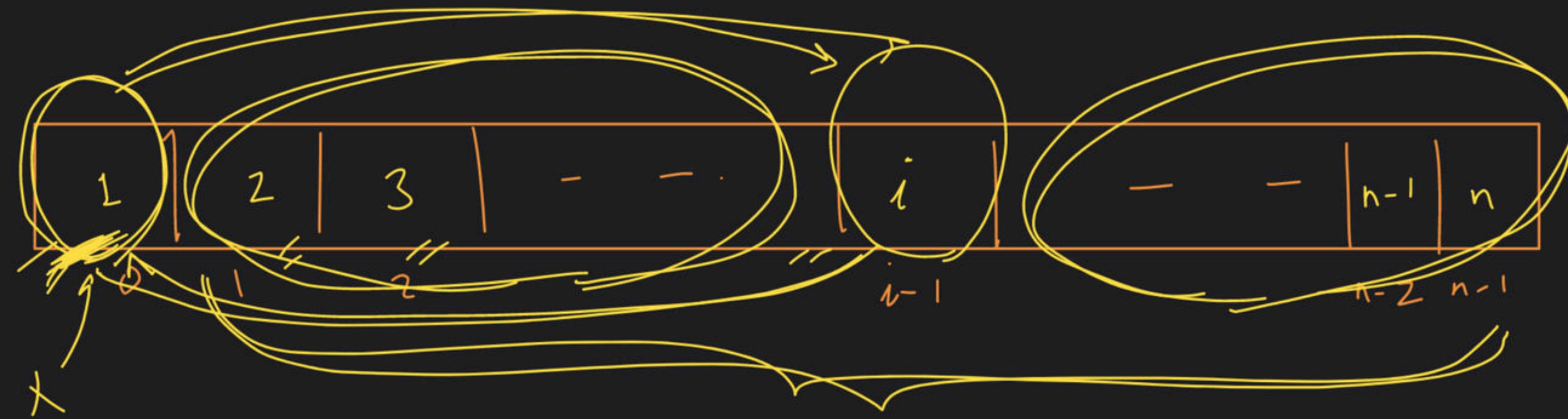
~~- X~~

~~- X~~



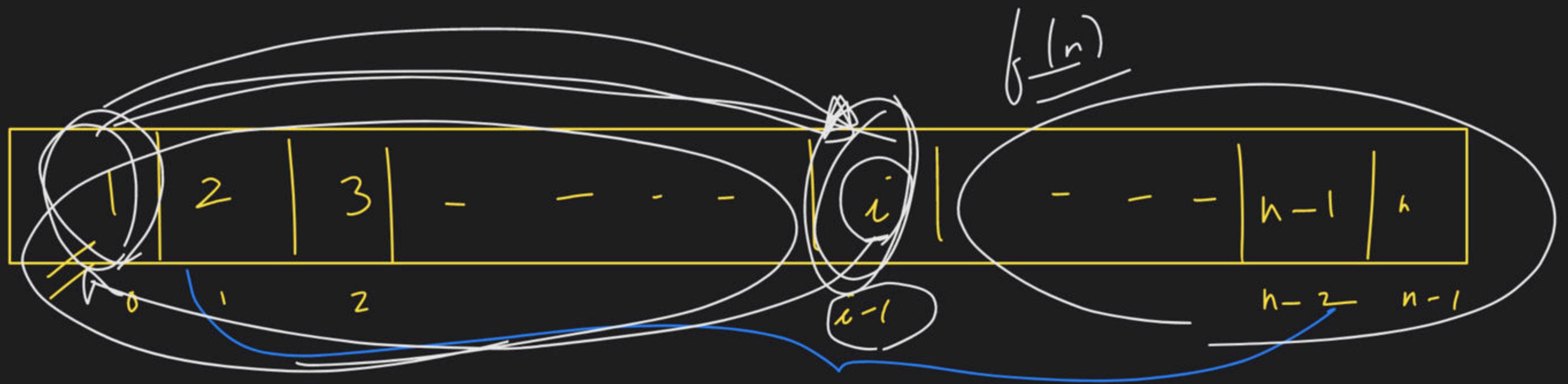






$$= (n-1) \star f(n-2)$$

when we swap  
 $i \leftrightarrow 1$  & we  
 consider  $i \triangleleft 1$ 's  
 position or find

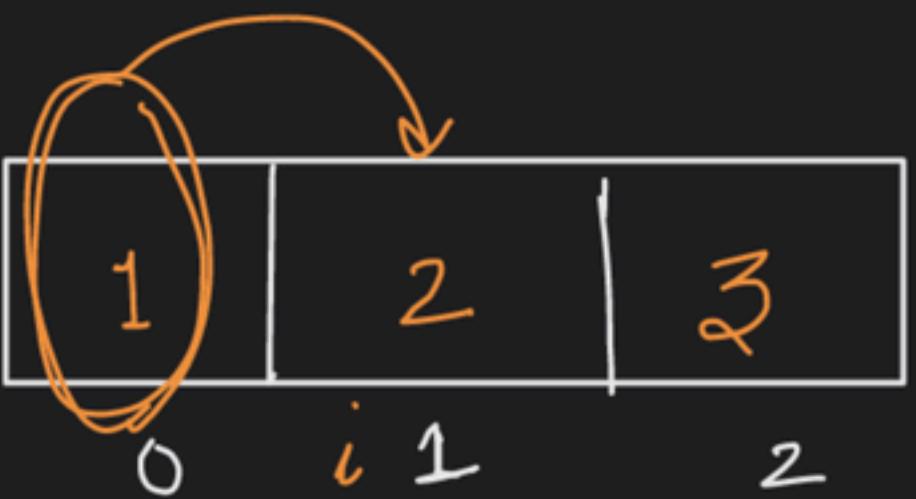


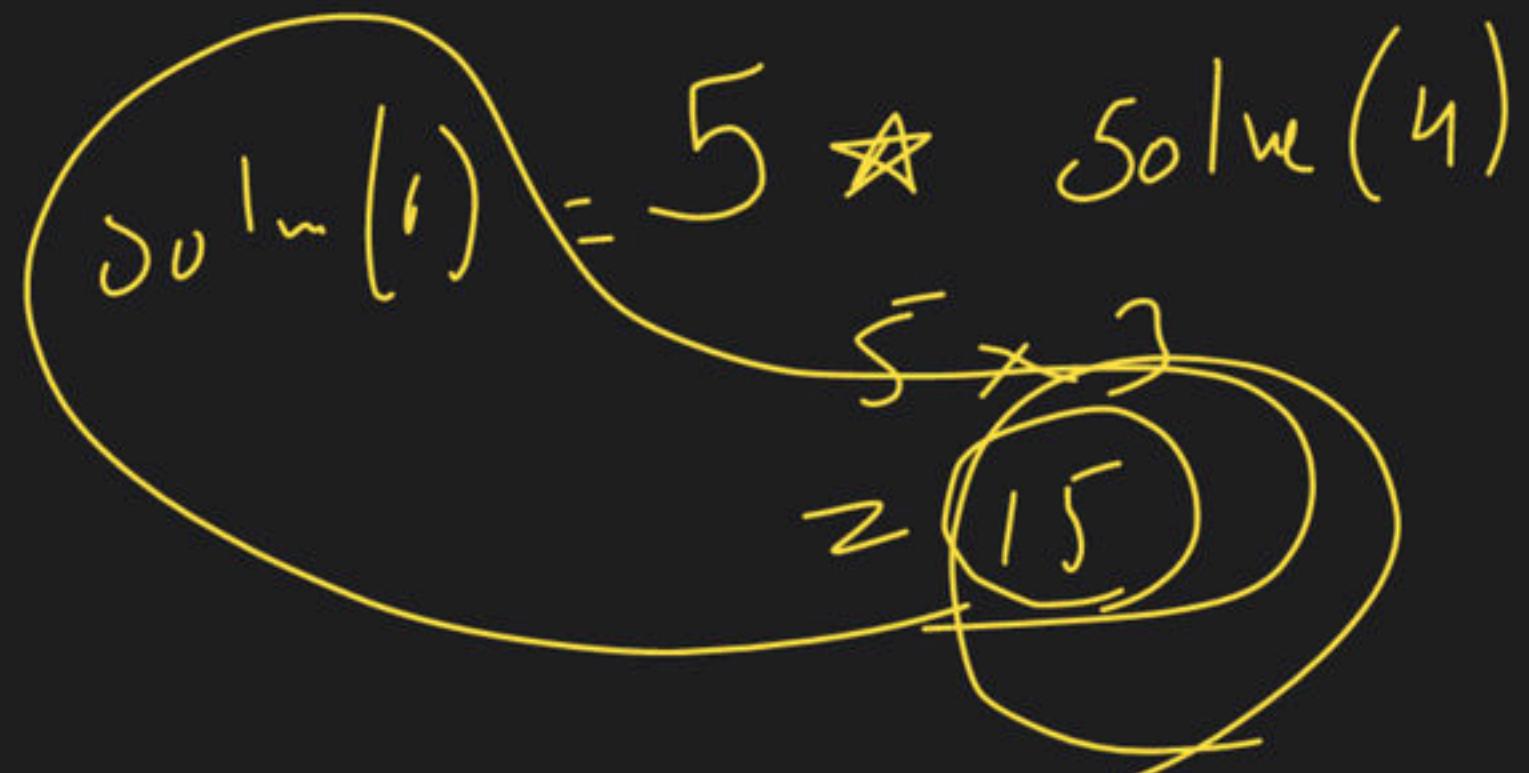
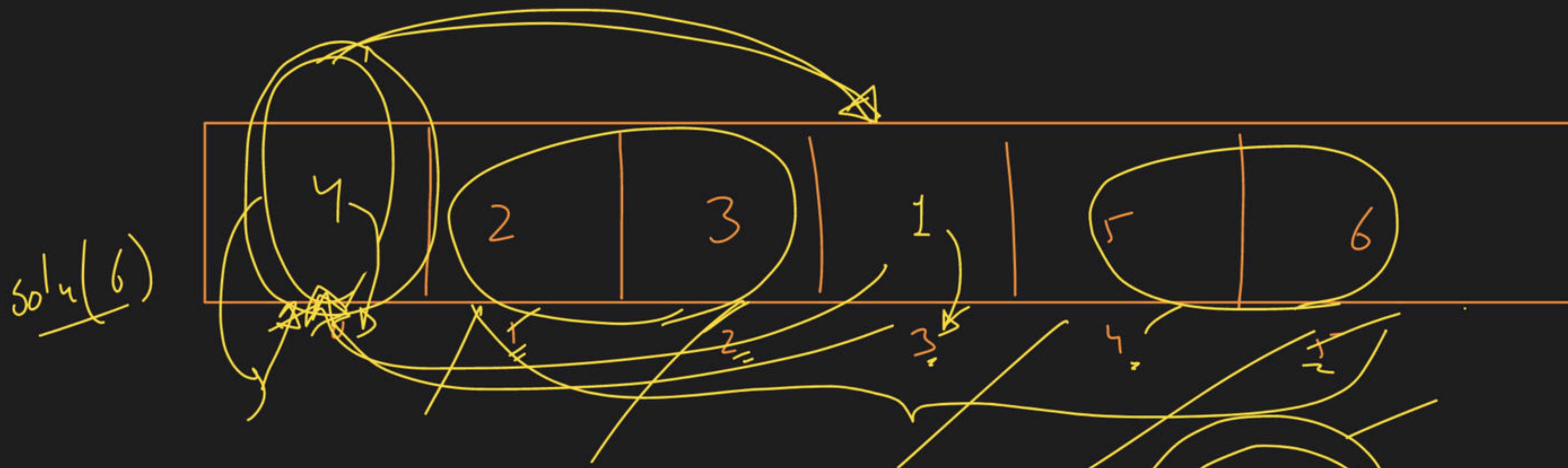
$$(n-1) \star f^{(n-1)}$$

$$\begin{aligned} & \text{solve } (n-1) \\ & \text{solve } (n-2) \end{aligned}$$

$$(n-1) \star f^{(n-1)} + (n-1) \rightarrow (f^{(n-2)})$$

$$(n-1) \rightarrow (f^{(n-1)} + f^{(n-2)})$$





$$\begin{aligned}
 S_{\text{Solve}}(4) &= 3 \times S_{\text{Solve}}(2) \\
 &- 3 \star 1 \\
 &= 3
 \end{aligned}$$





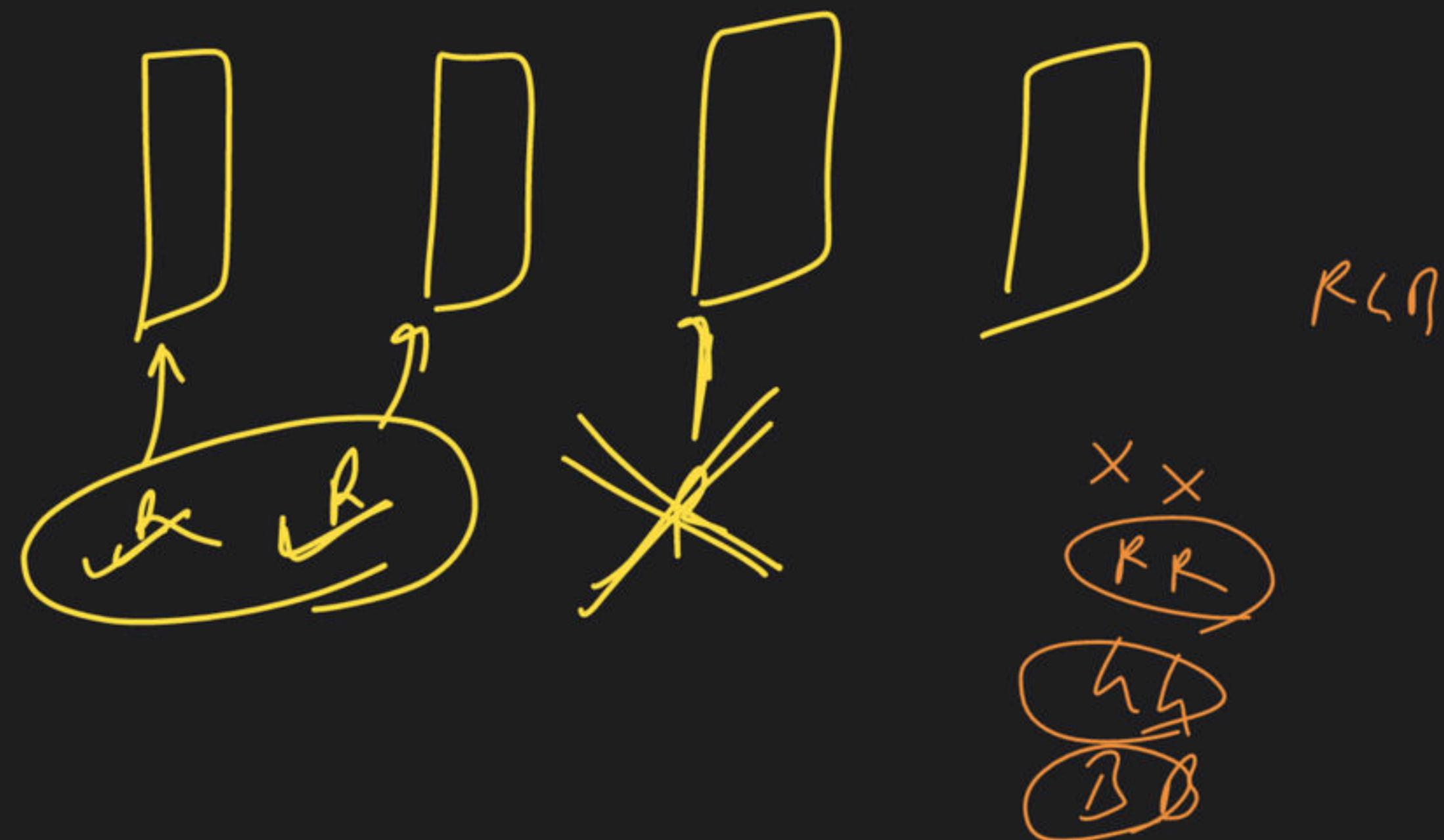
$\text{soln}(1) = 5 \star (\text{soln} 2)$

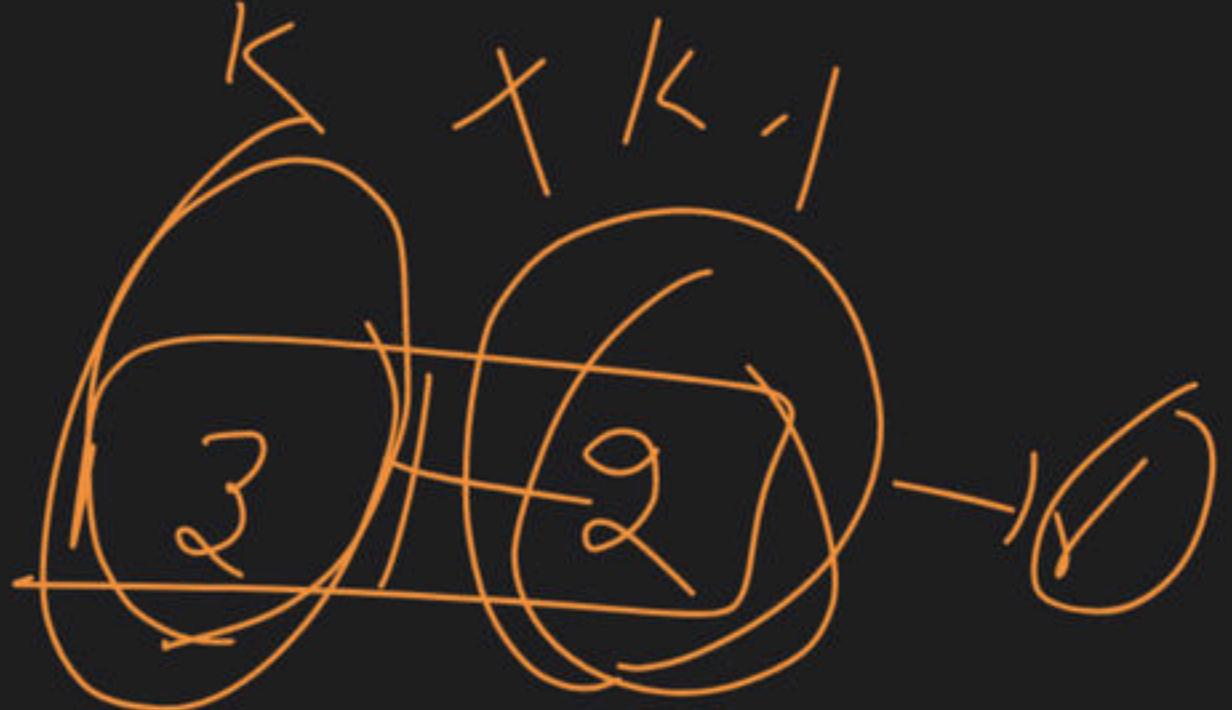
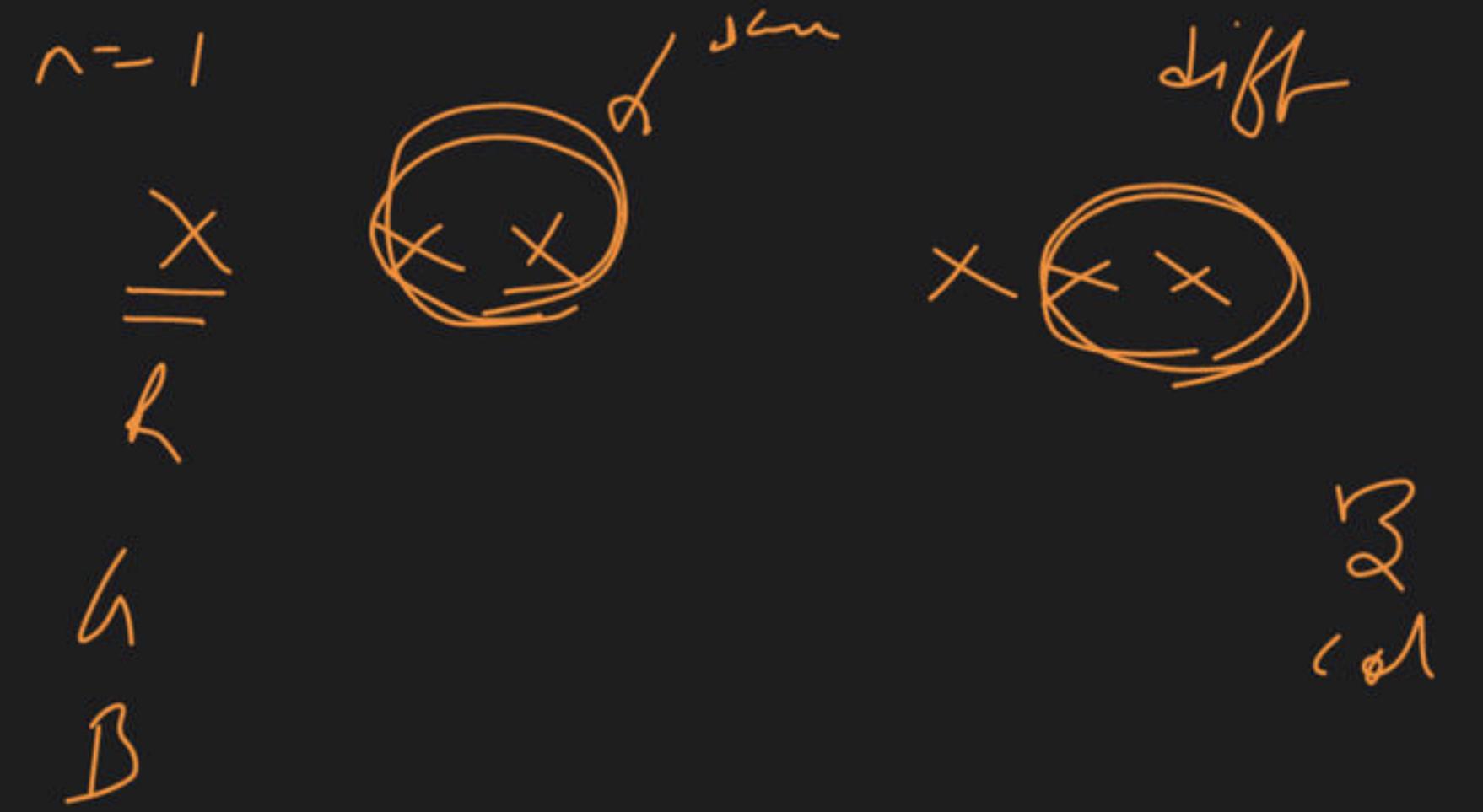
Below the main diagram, there is a smaller diagram showing a linked list with two nodes. The first node has a large oval on its right side. A curved arrow points from the right side of the first node to the left side of the second node. The second node has a small oval on its right side. Below this second node, there is a horizontal line with two short diagonal lines extending from it, resembling a car's exhaust.

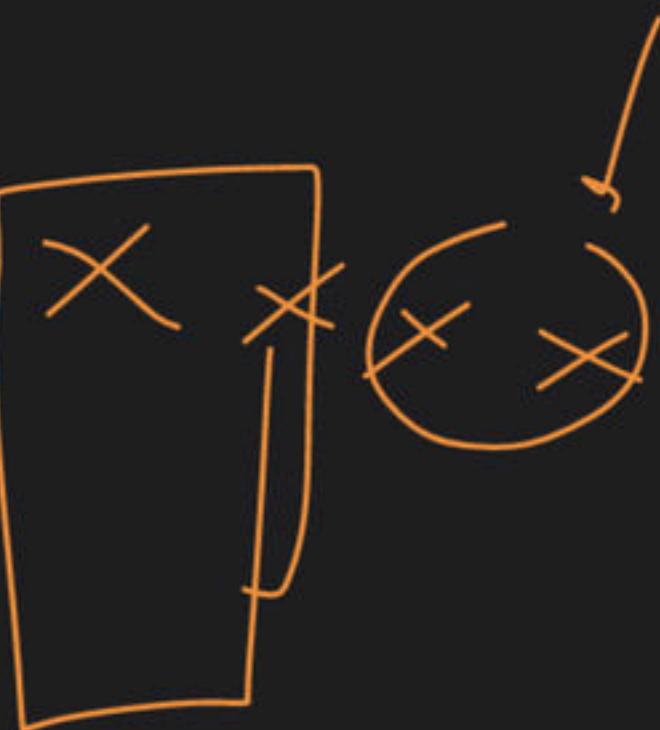
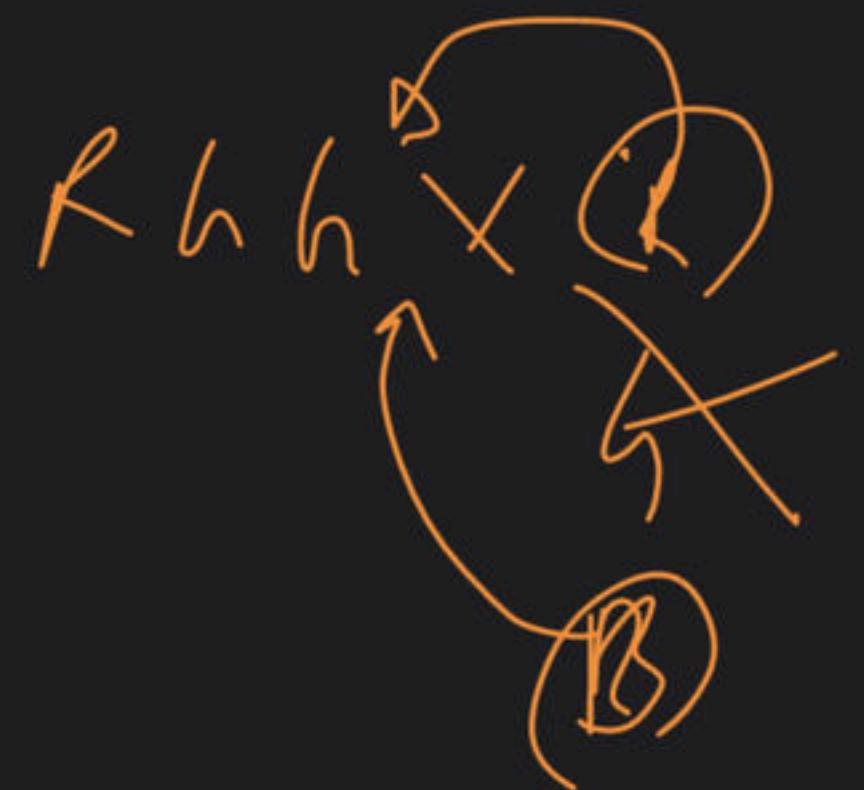
$$(n-1) * \left( f(n-1) + f(n-2) \right)$$

Painting fence

→  $n$  post  
K colors





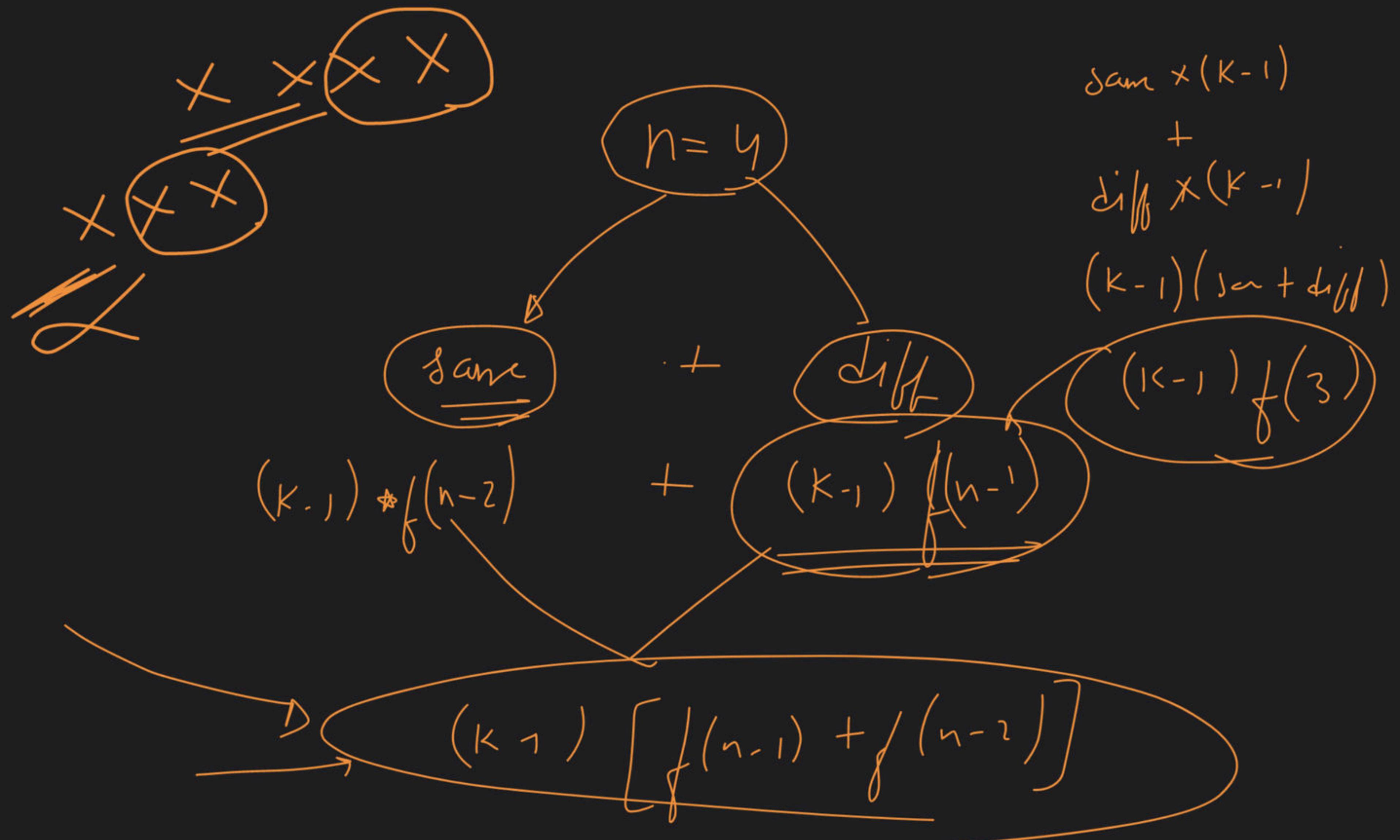


10

XXX

K = 3 -

→ R GB



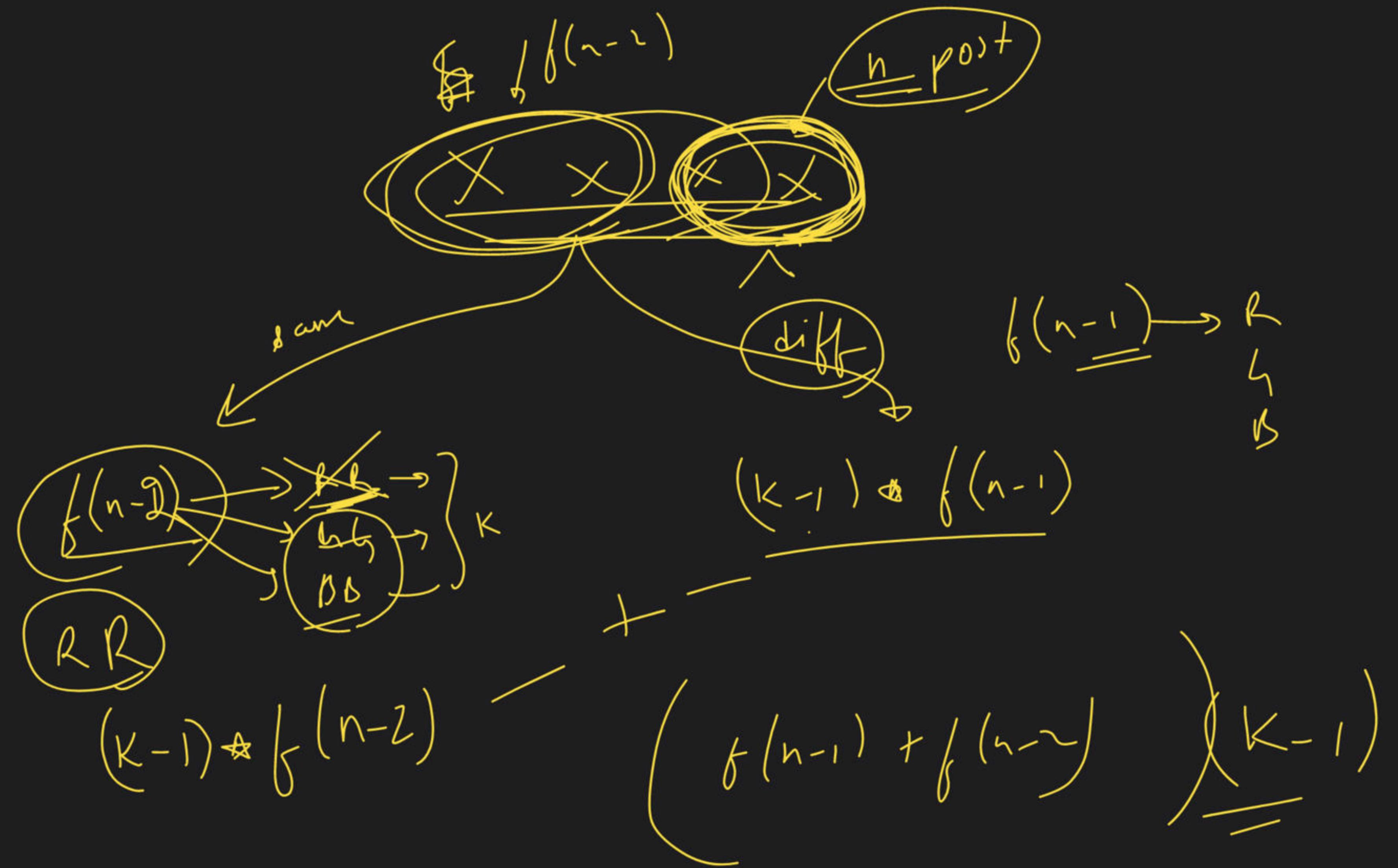
$n \rightarrow \text{pos}^+$  / pillars  
point

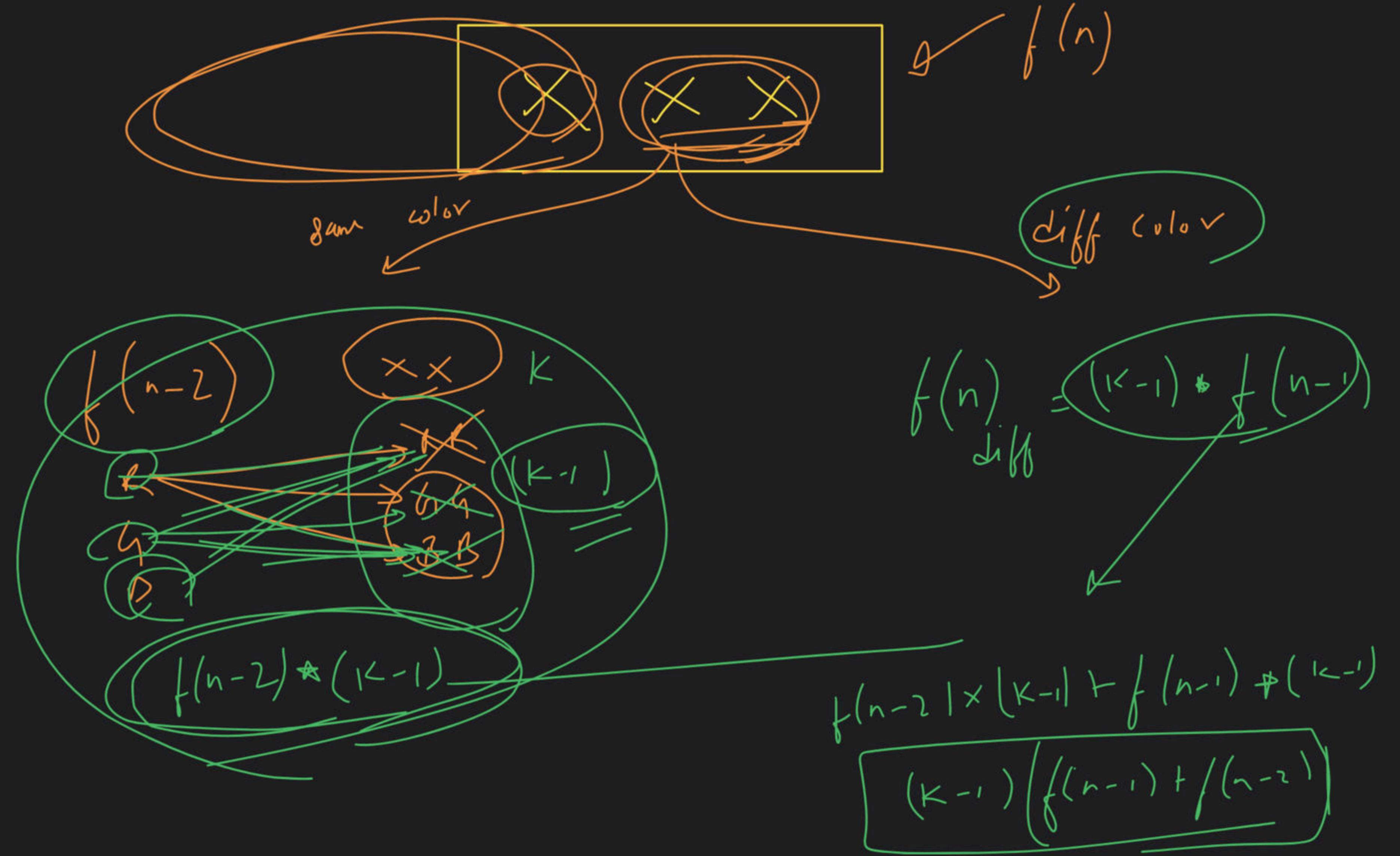
$K \rightarrow \text{colon}$

$X$   
 $n=3$

$X \quad X$   
 $K=3$

total ways  
not more than  
2 adjacent pos  
Same same colors



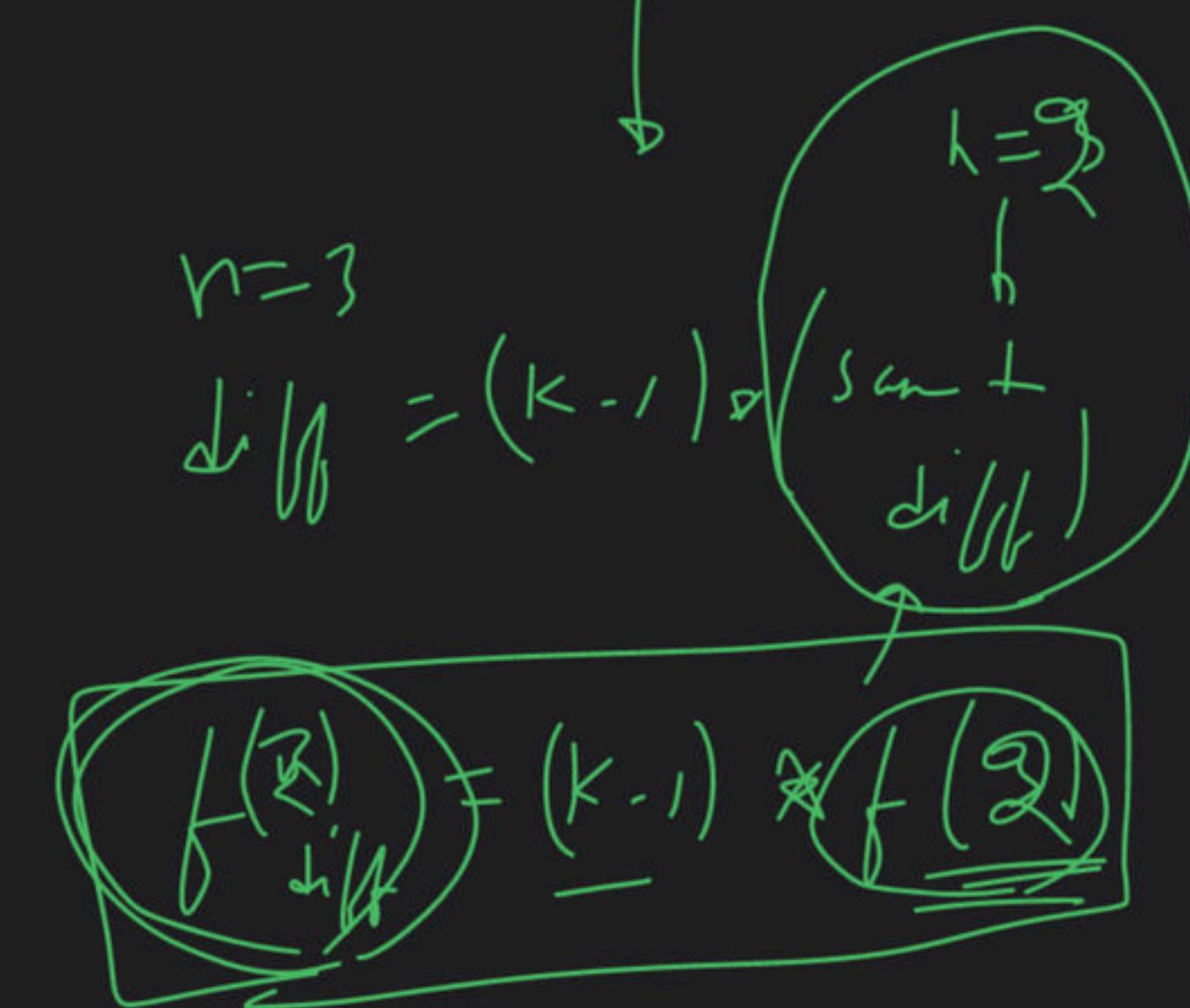
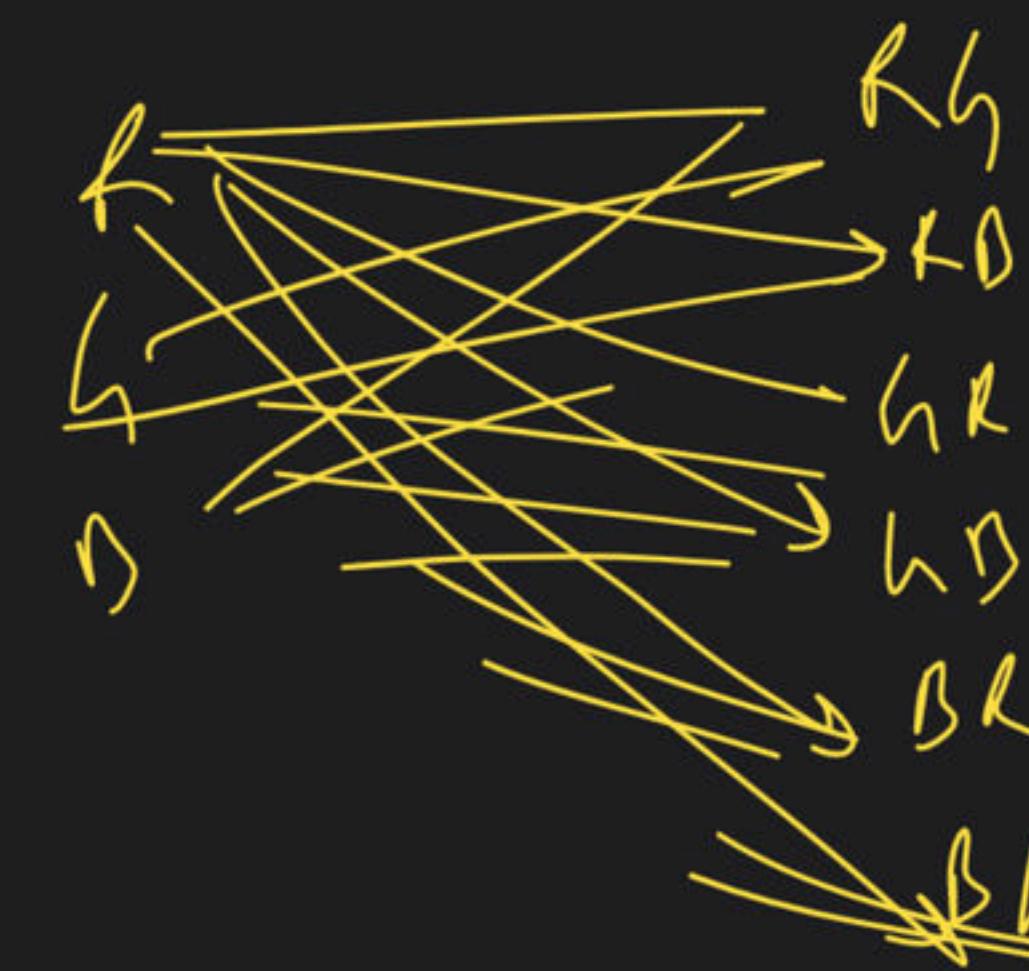
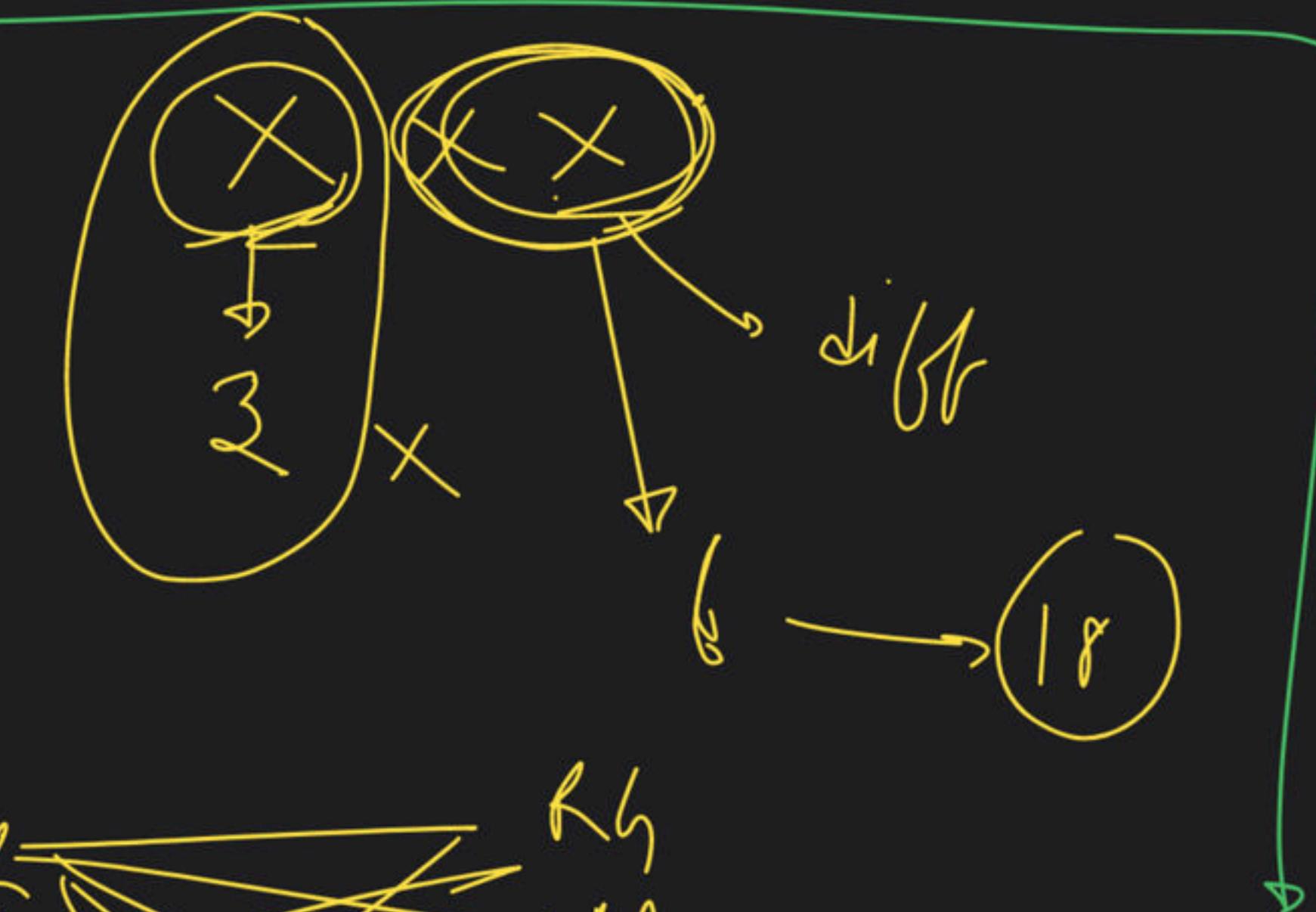
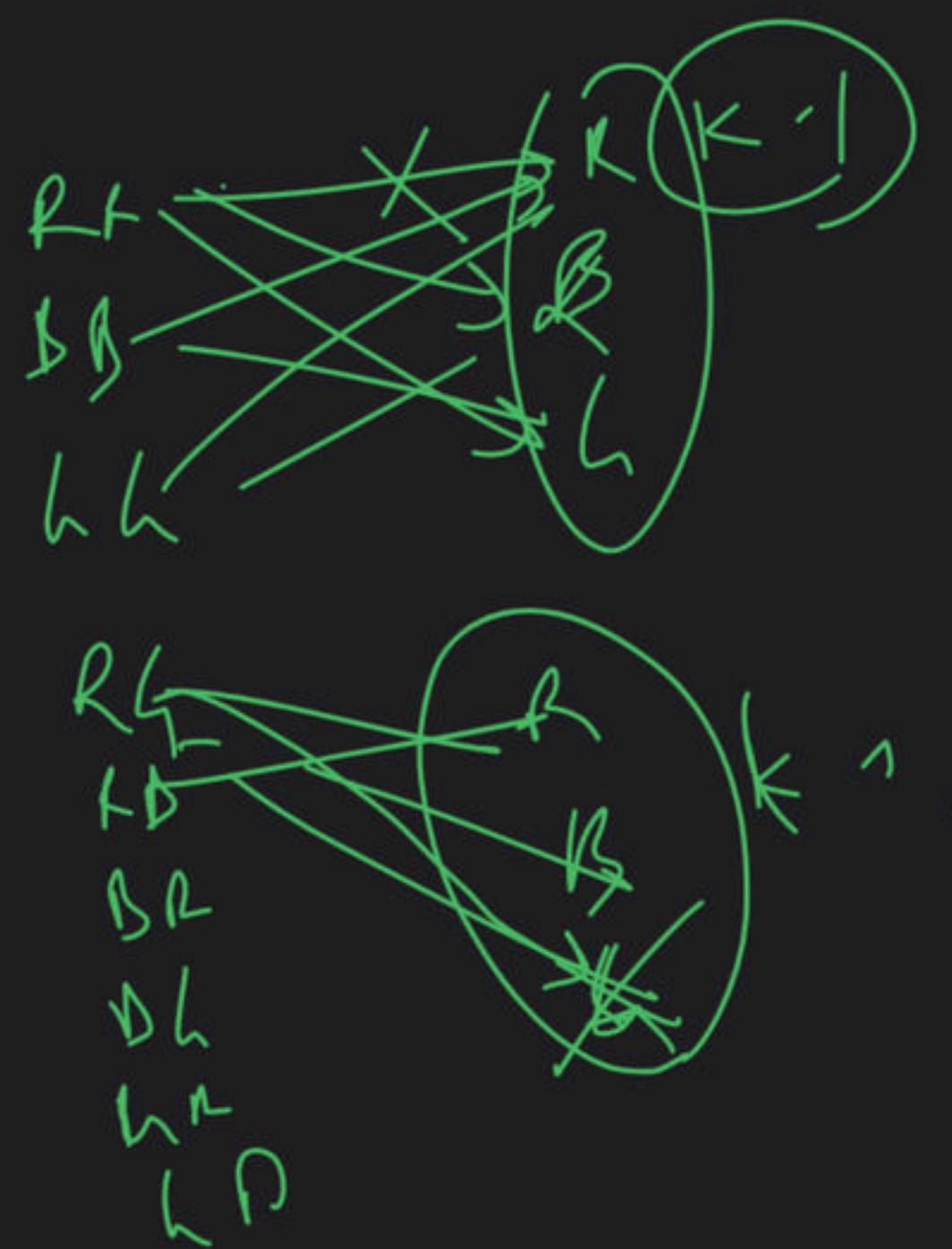


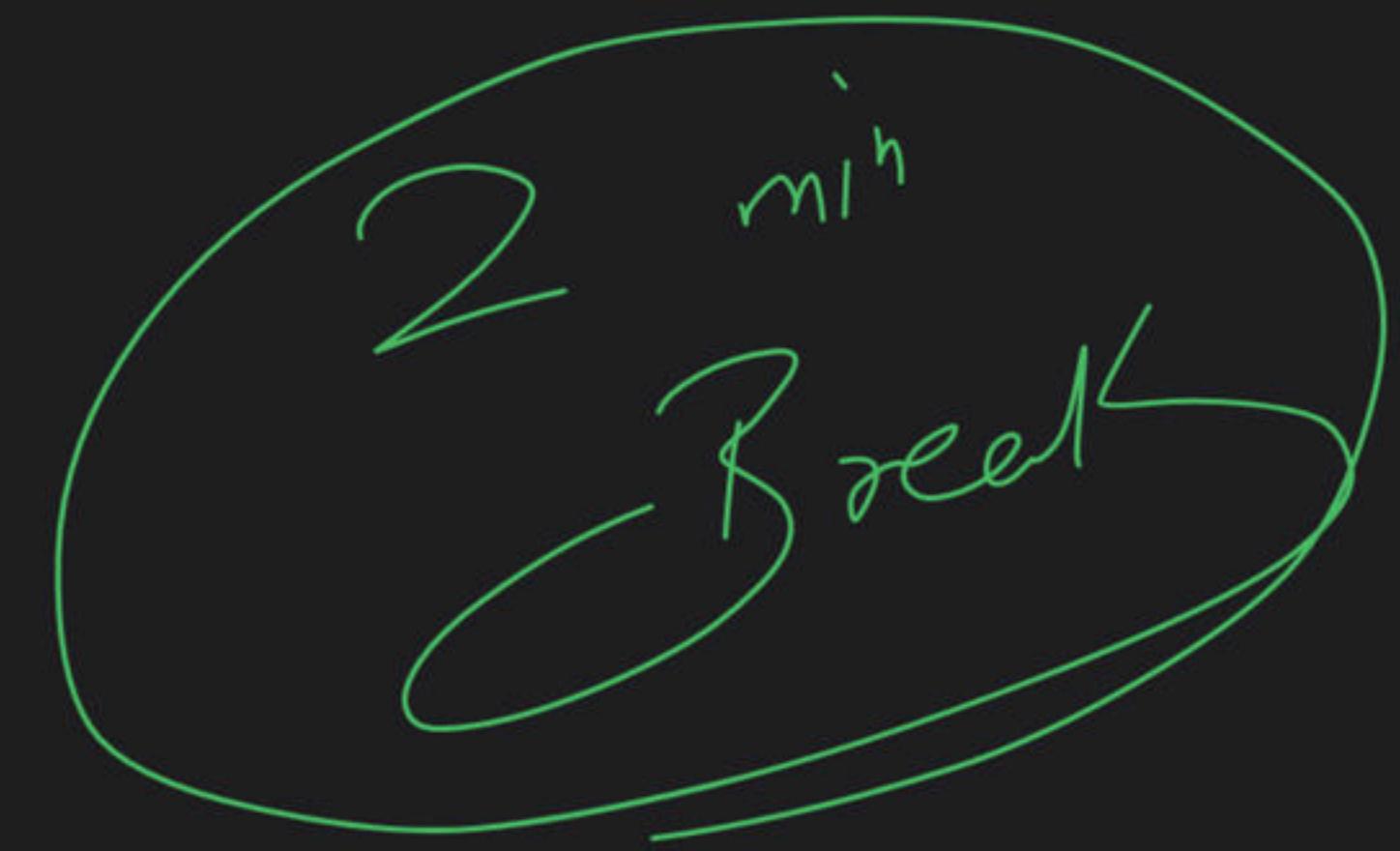
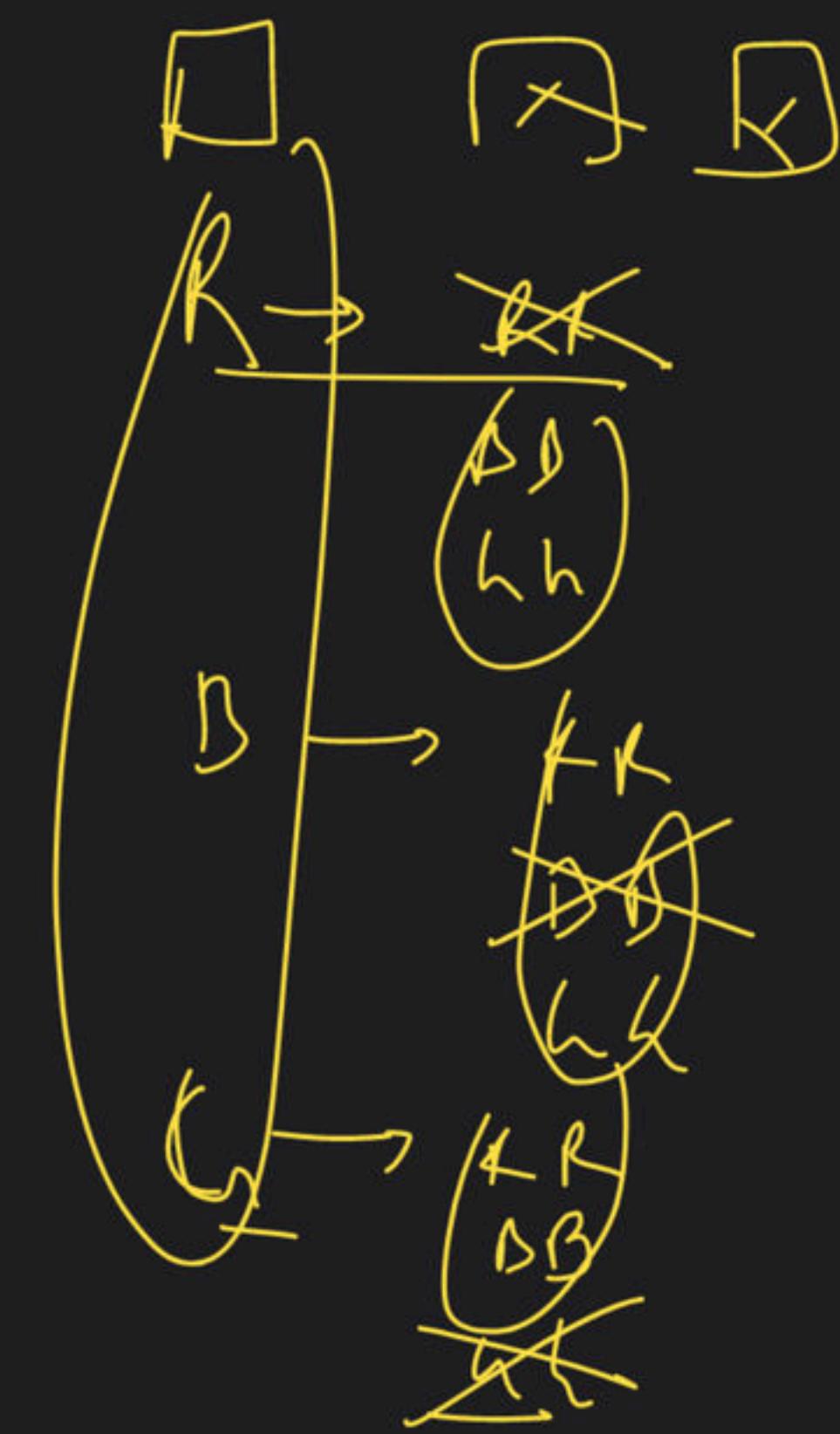
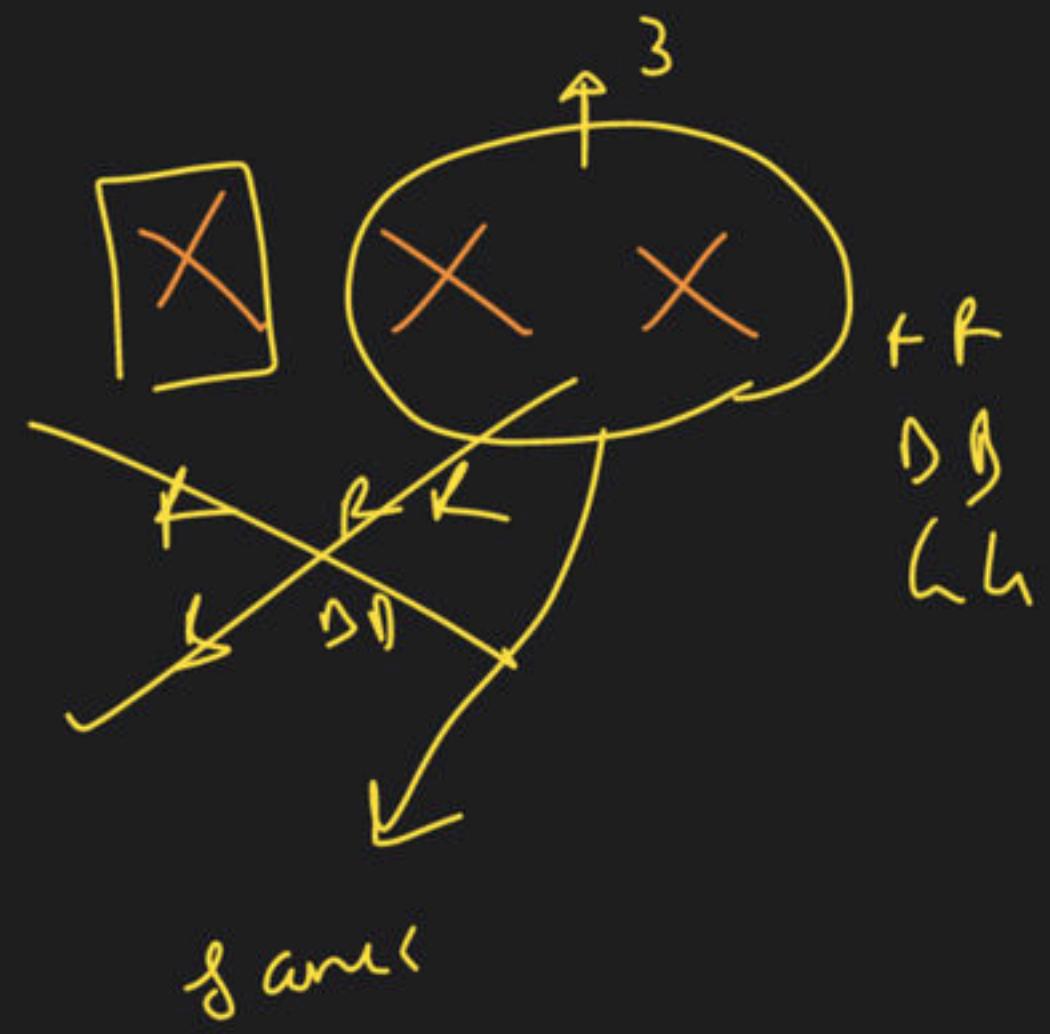
	$n=1$	$n=2$	$n=3$	$n=4$
<u>Same</u>	$R$ $G$ $B$	$RR$ $RG$ $GB$ $BB$	$RRR$ $RRG$ $RRB$ $RGG$ $RGB$ $RBG$ $GGG$ $GGB$ $GGB$ $BBB$	$RRRR$ $RRRG$ $RRRB$ $RRGG$ $RRGB$ $RRBG$ $RRBB$ $RRRGG$ $RRRBB$ $RRGGG$ $RRGGB$ $RRGBB$ $RRBBB$ $RRRGGG$ $RRRBBB$ $RRGGGG$ $RRGGBB$ $RRGBBB$ $RRBBBB$
<u>Diffs</u>	$K=3$	$K=3$	$3 \times L$ $L \times (L-1)$	$18$

$$n=7$$

$$\text{diff} = \cancel{\text{same} \times (k-1)} + \text{diff} \times (k-1)$$

$\text{diff} \Rightarrow \cancel{\text{diff}} \times (k-1)$



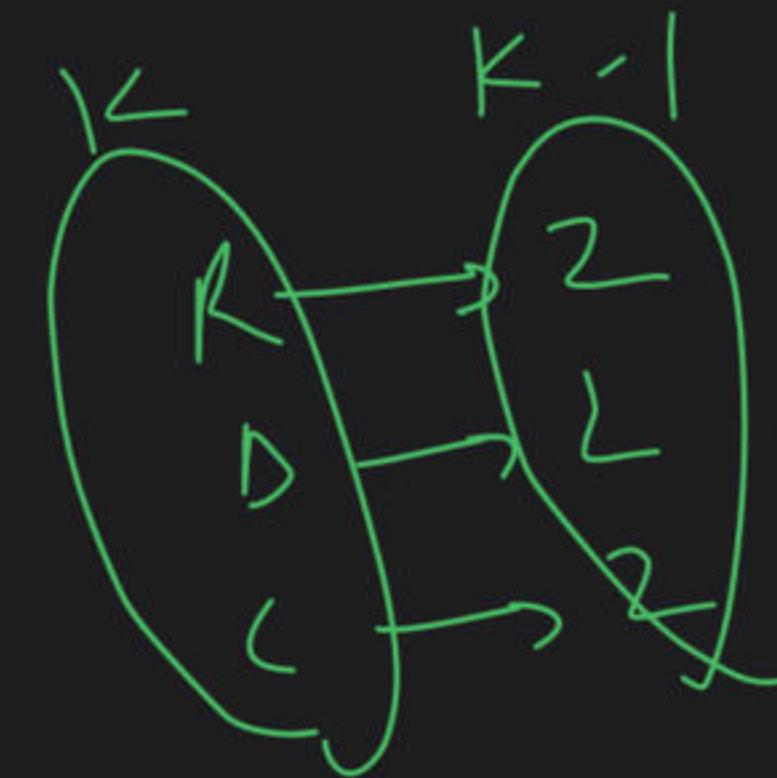




RHD

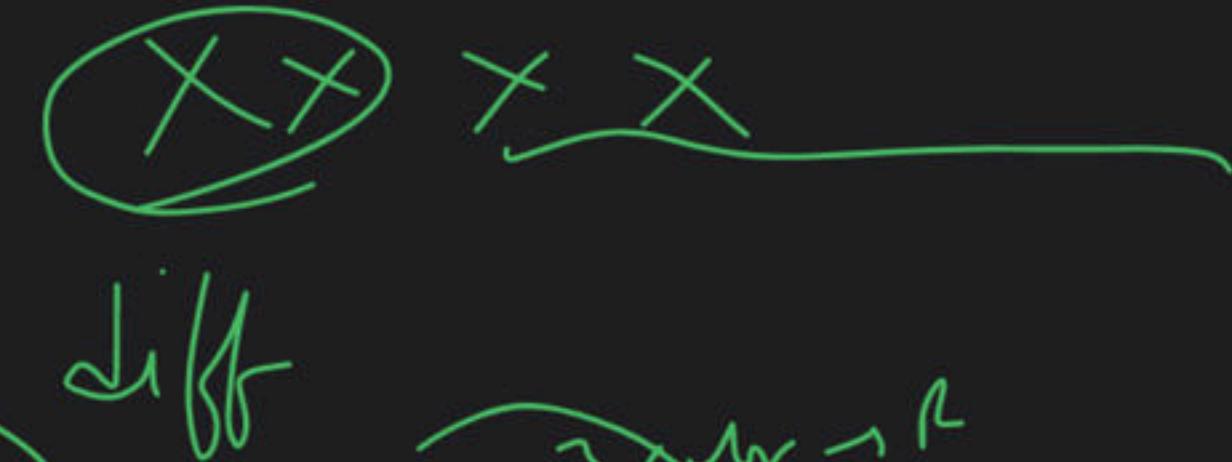


same



RR  
hh  
BB

K=3



diff

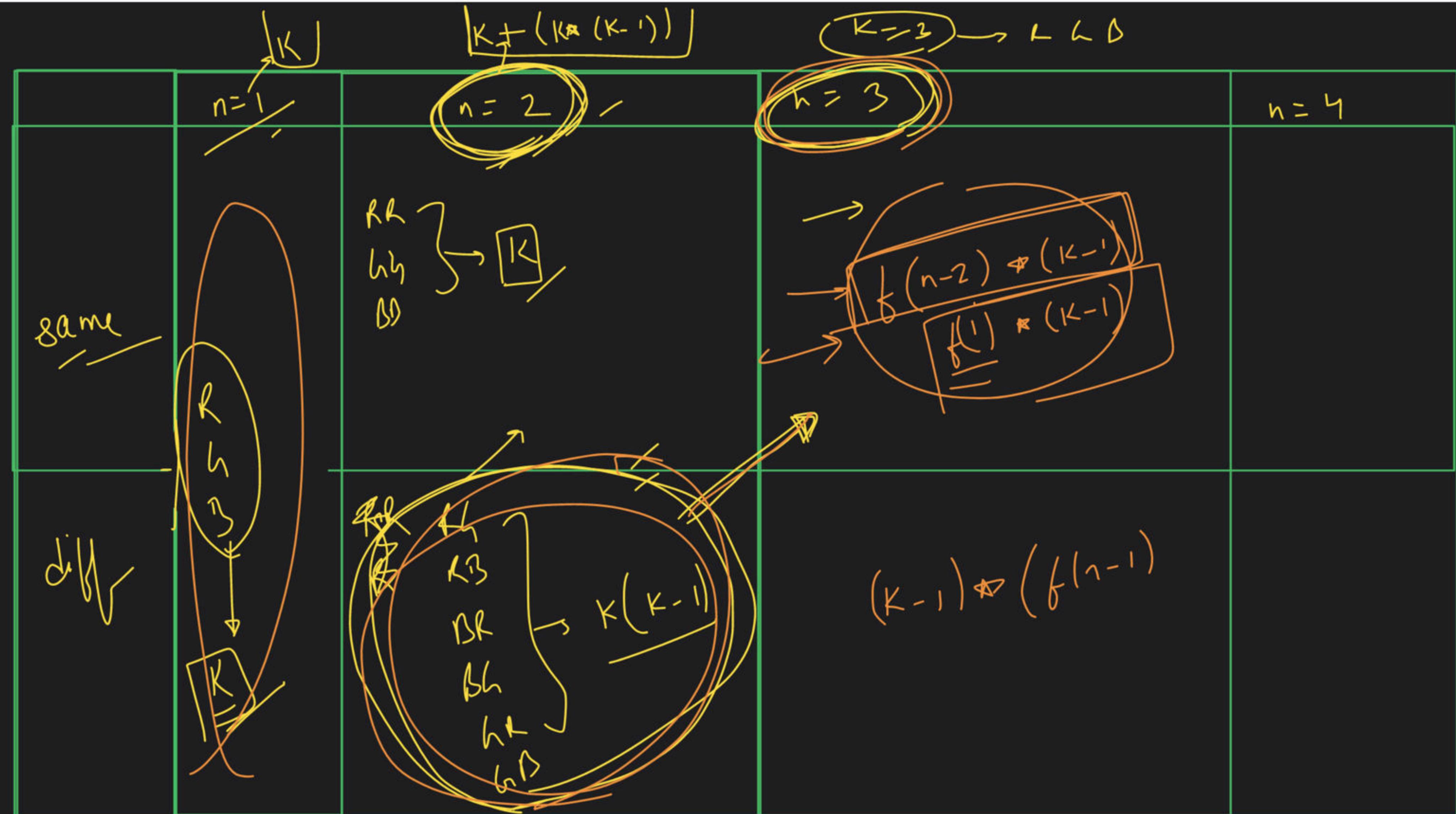
3 way R

3	2
0	1

0

RG  
RB  
GB  
GR  
BR  
BH

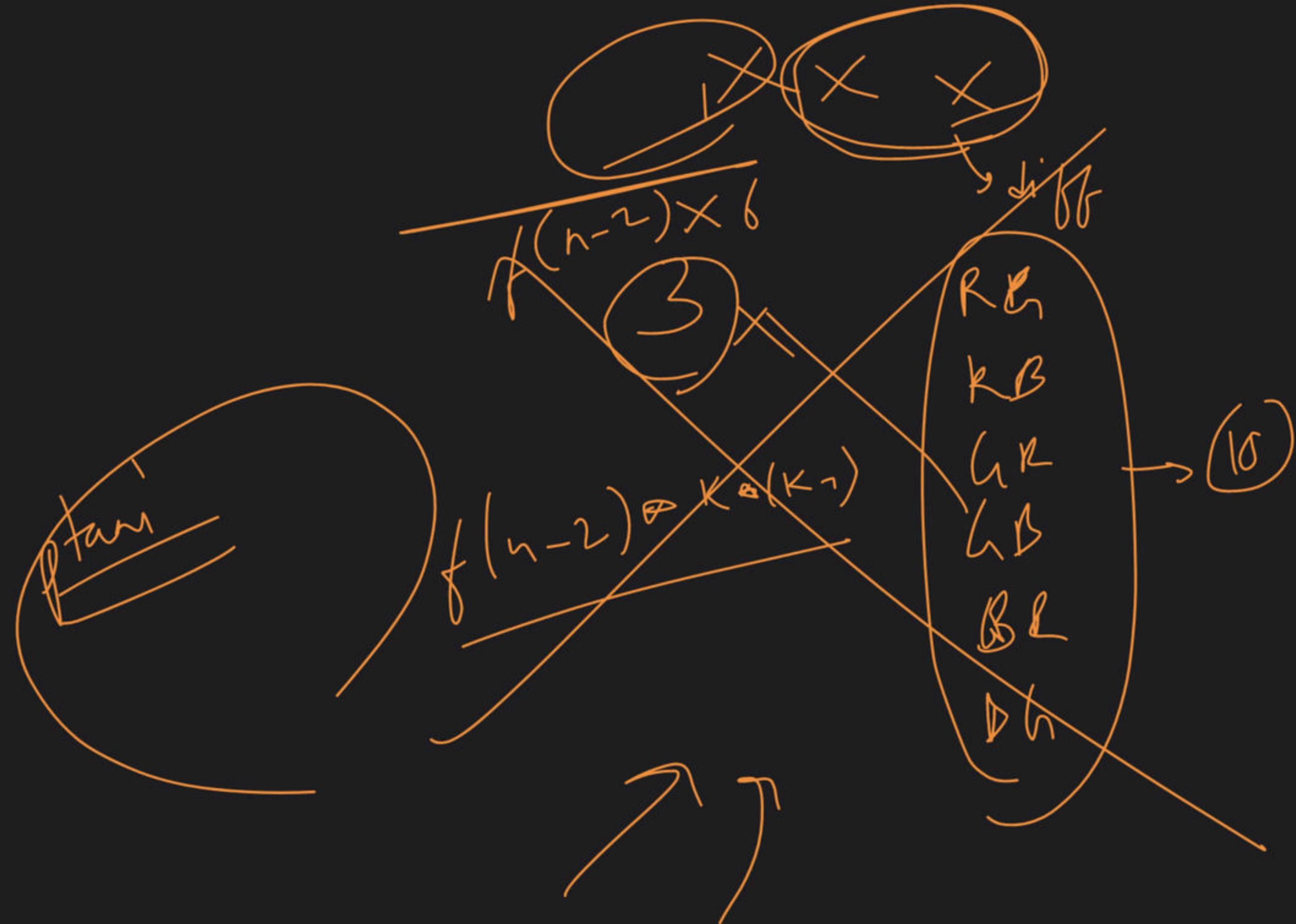


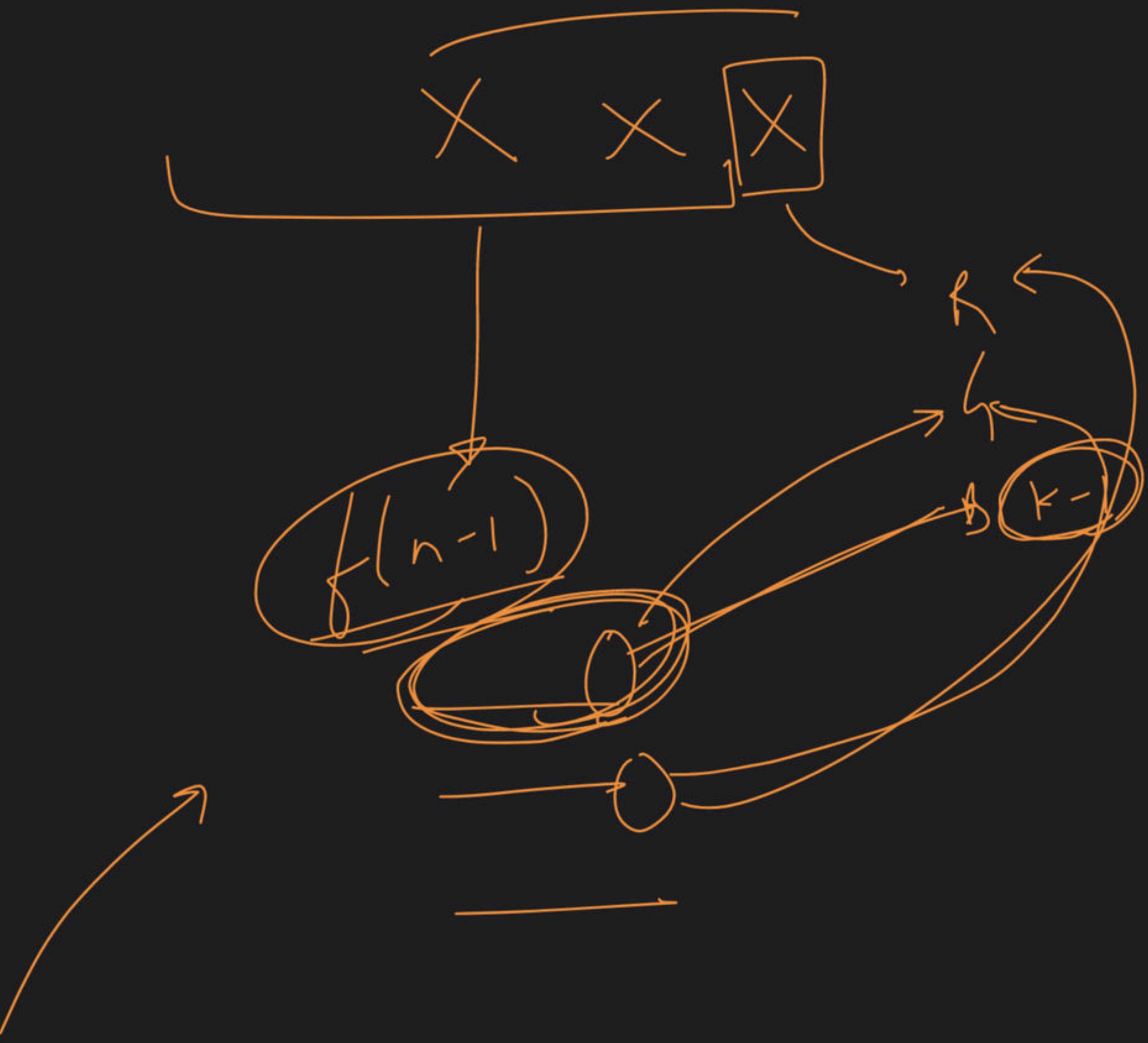


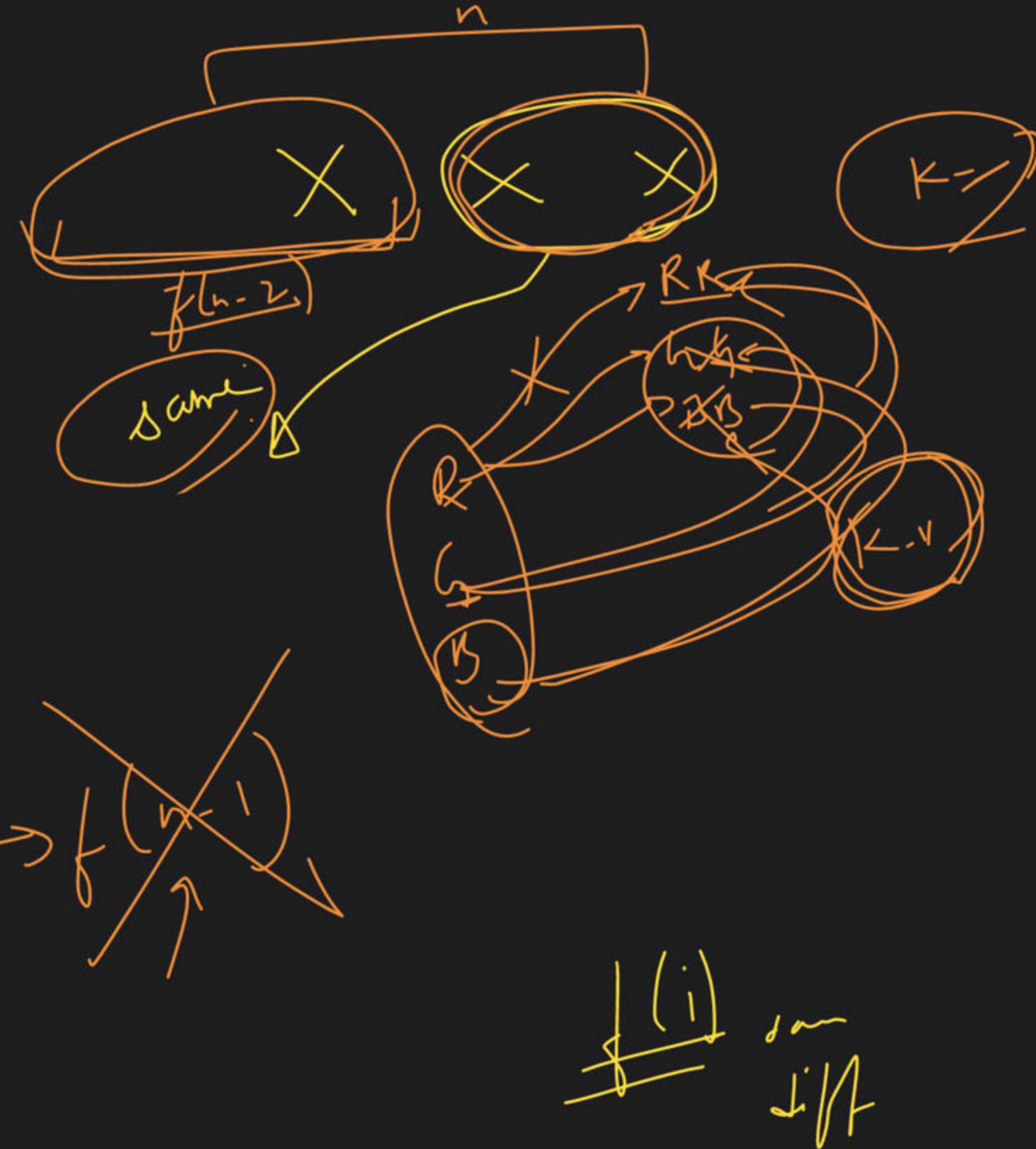
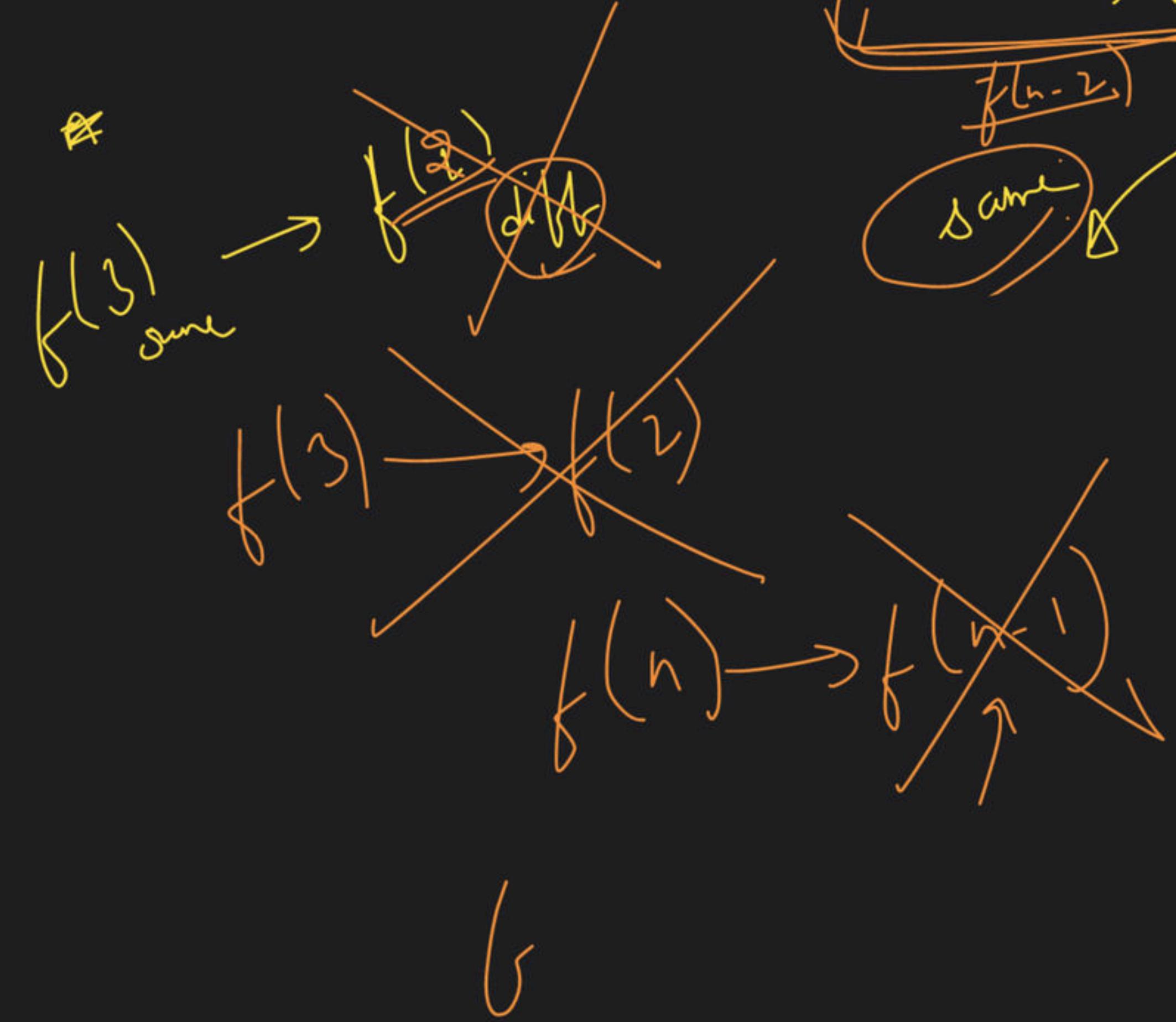
$$f^{(3)} \rightarrow \overbrace{f^{(3)}}^{\text{sum}} + f^{(3)} \text{ diff}$$

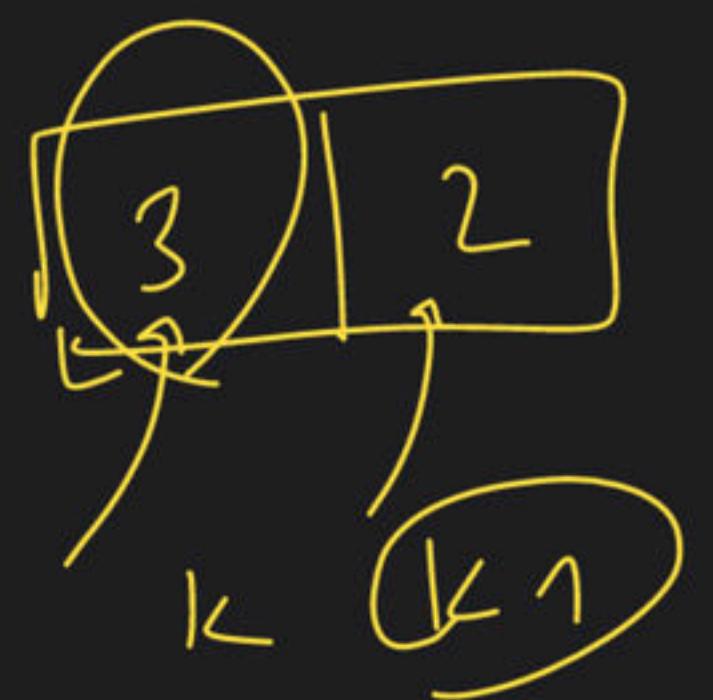
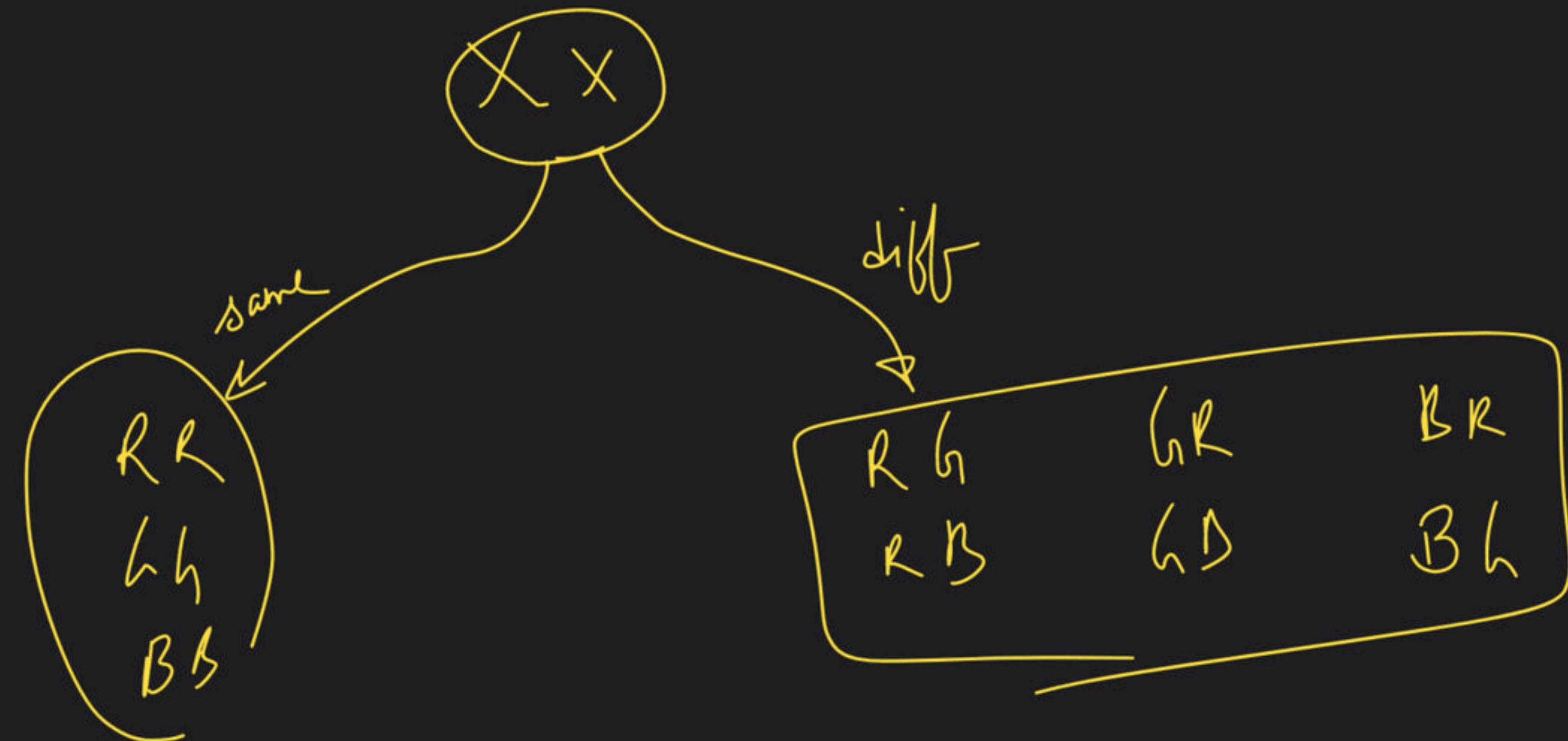
$$\Rightarrow (k-1) * (f^{(n-1)}) + (k-1) f^{(n-1)}$$

$$f^{(n)} = [f^{(n-1)} + f^{(n-2)}(k-1)]$$

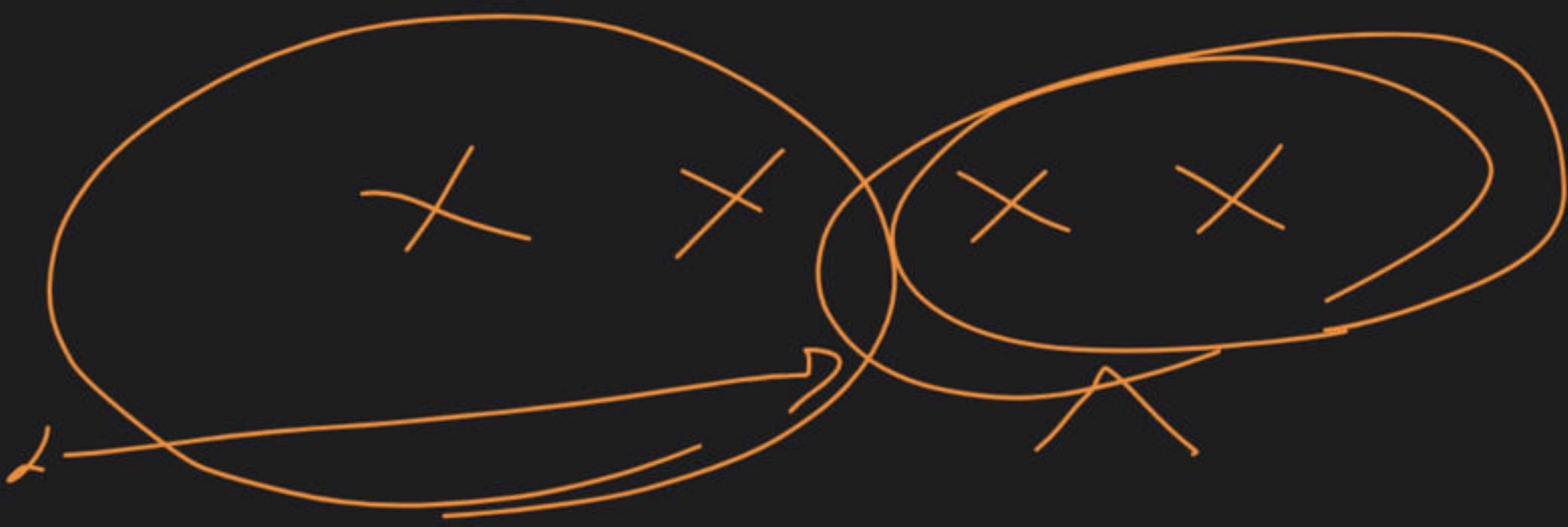


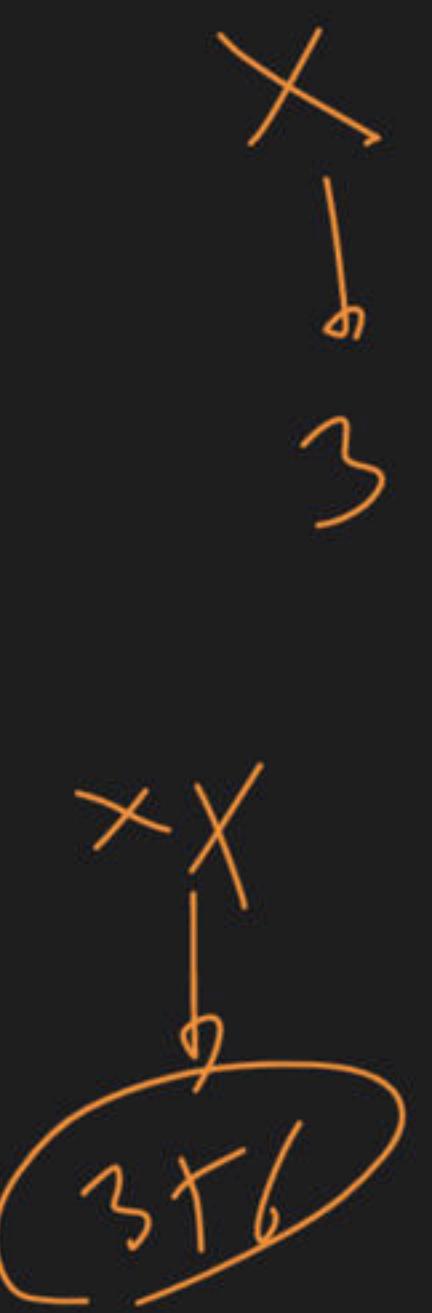
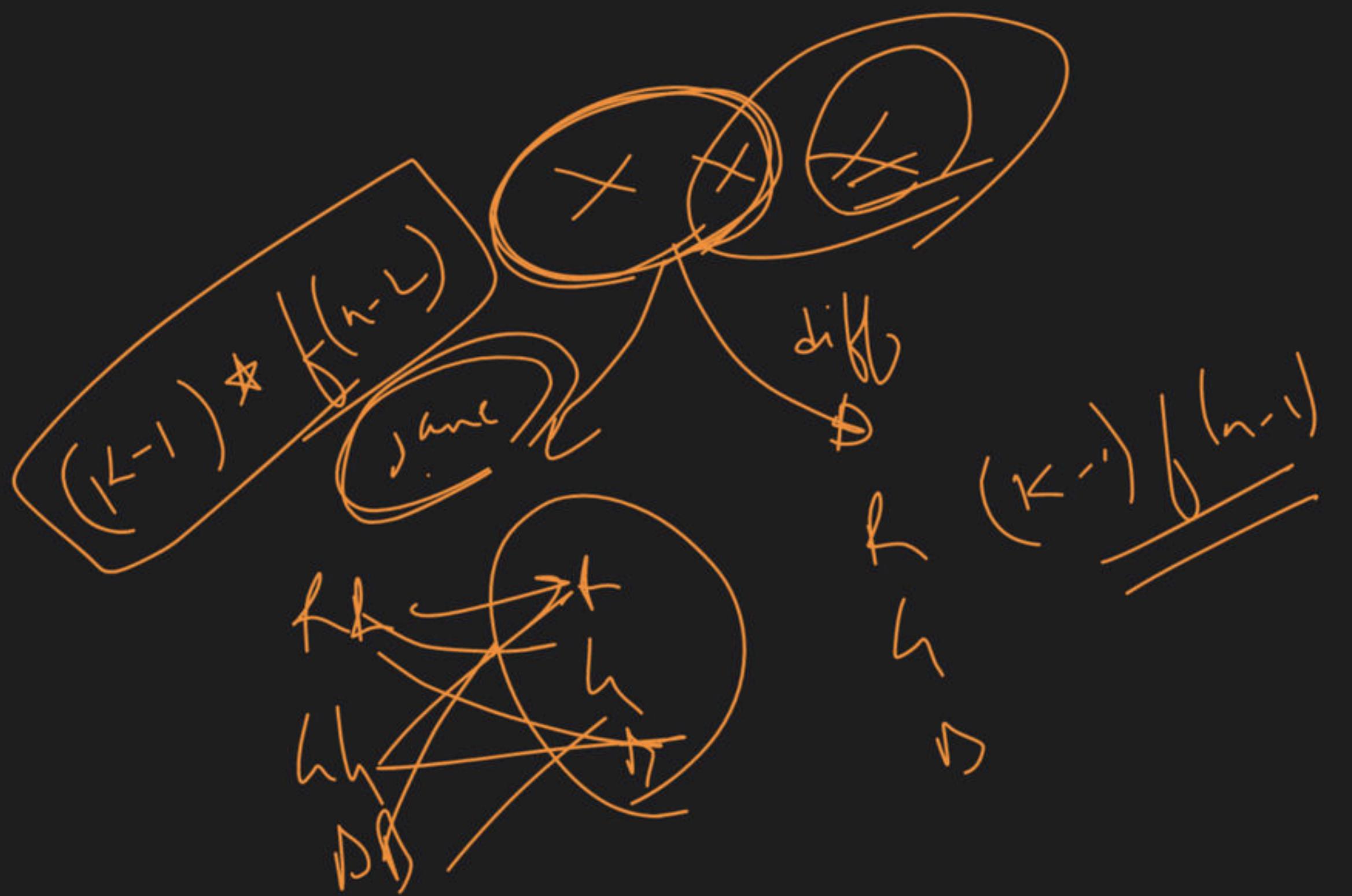










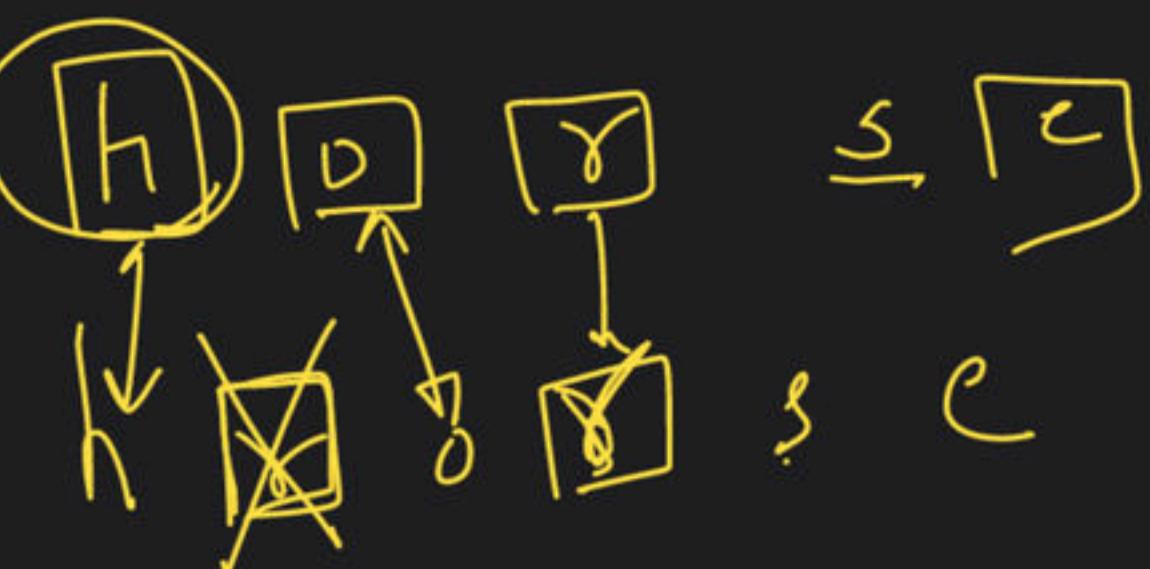


$$f^{(n-1)} + f^{(n-2)}$$

→ Edit distance

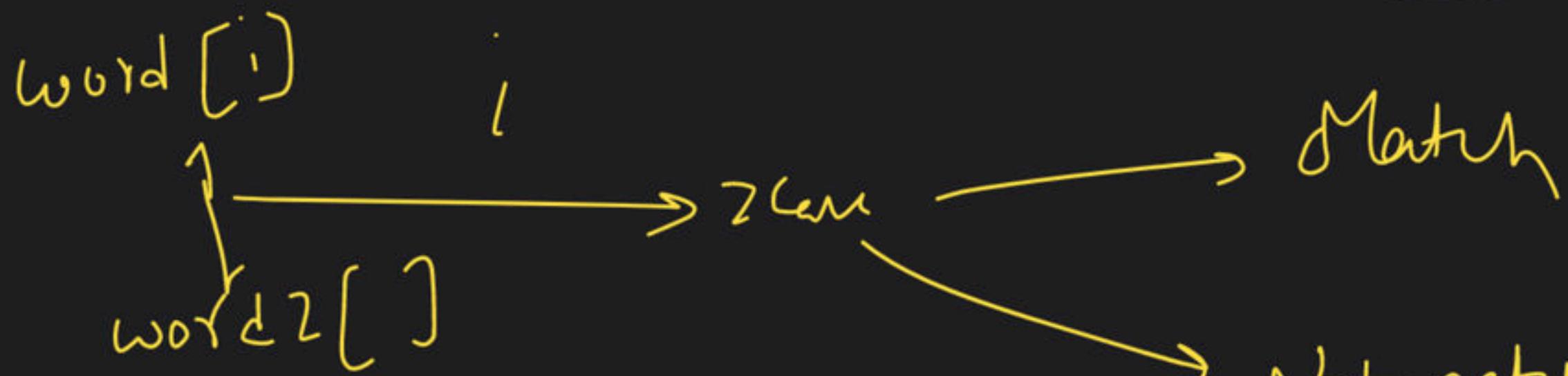
op → insert ✓  
→ remove ✓  
→ replace ✓

word1 =>



word2 =>

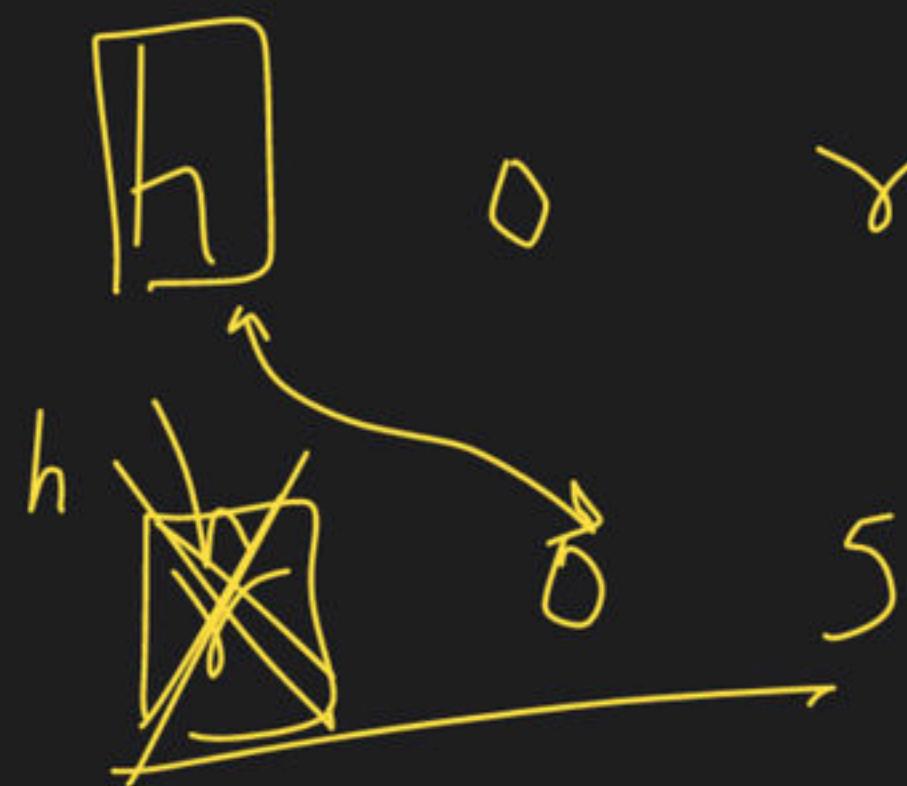
↓ op



Not match → insert  
→ remove  
→ replace

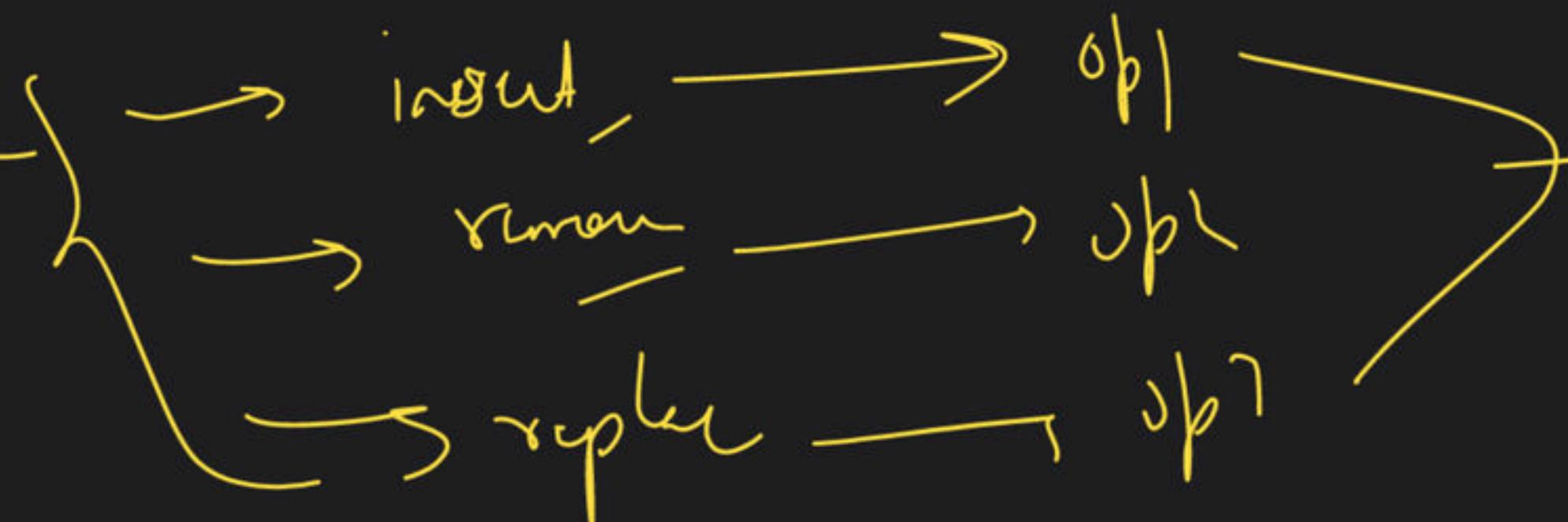
← min { } ↘ ↙

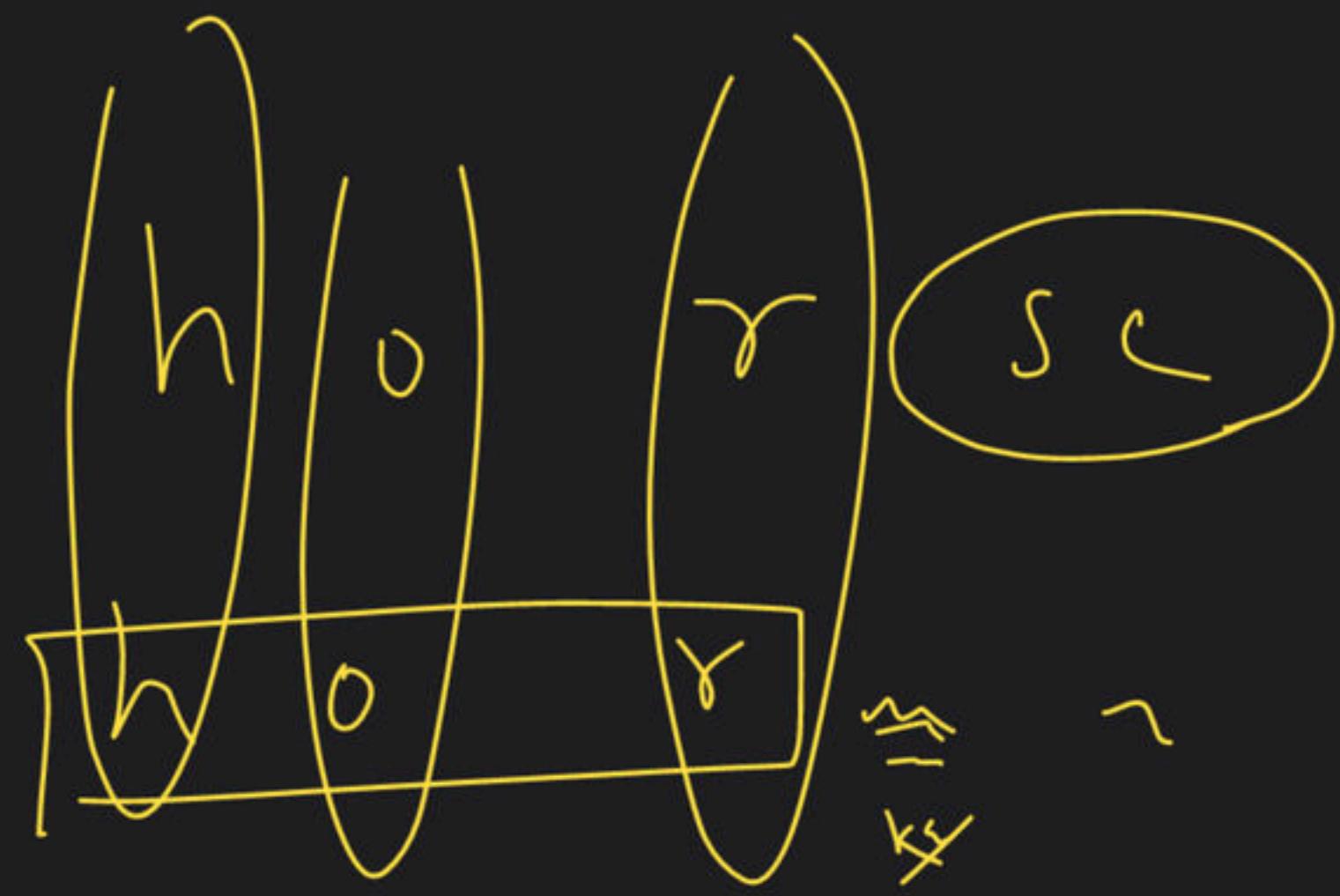
meth → age back gather  
age next character px



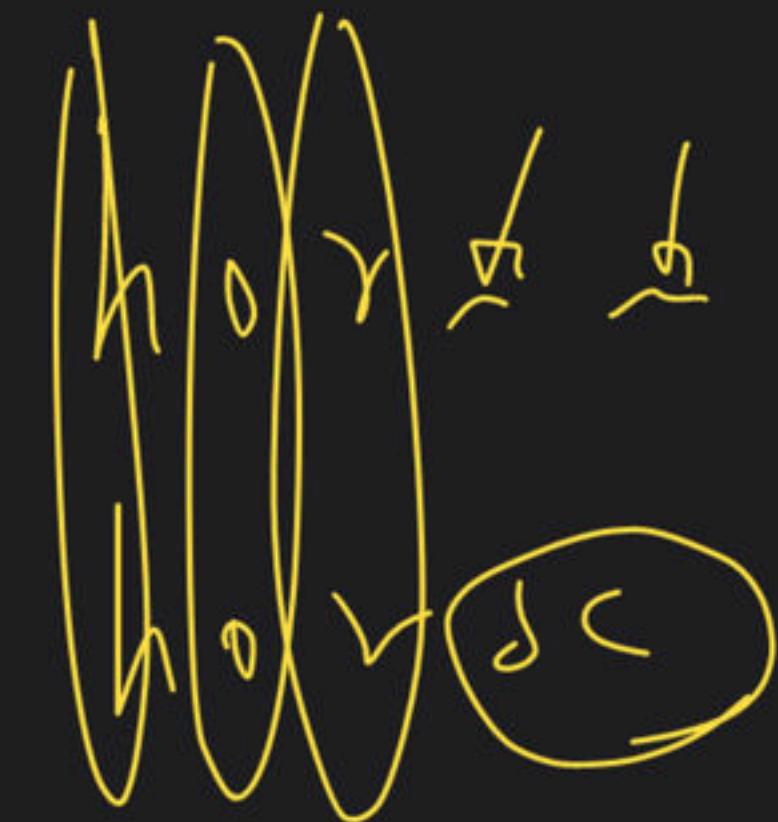
γ γ sc

Not meth





$\approx$   
 $\propto$   
 $\propto p$   
 $\propto w$



insert

$w_1 \rightarrow$

$w_2 \rightarrow$



$o \quad r \quad s \quad c$

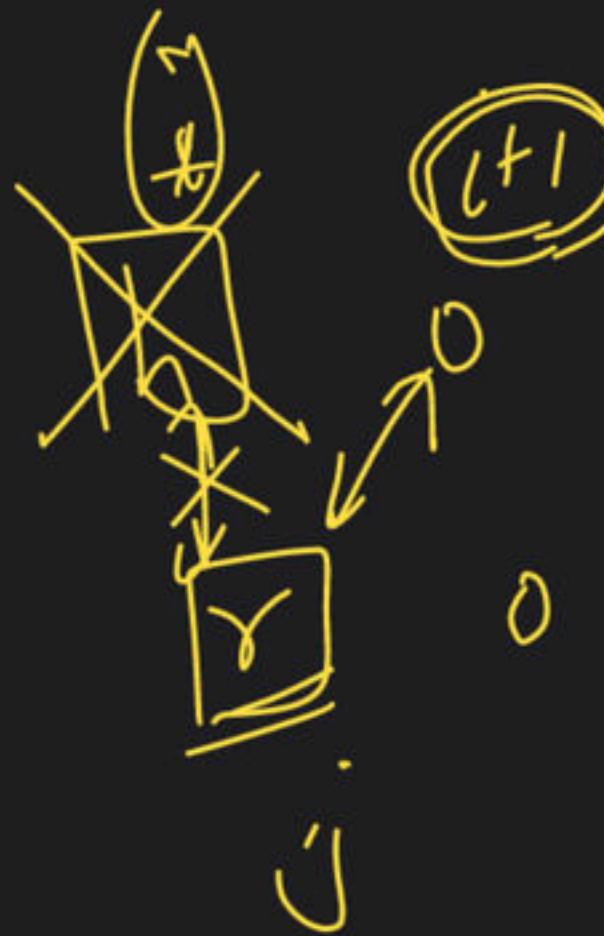
$s$

$j[n]$

remove

$w_1 \rightarrow$

$w_2 \rightarrow$



$r \quad s \quad c$

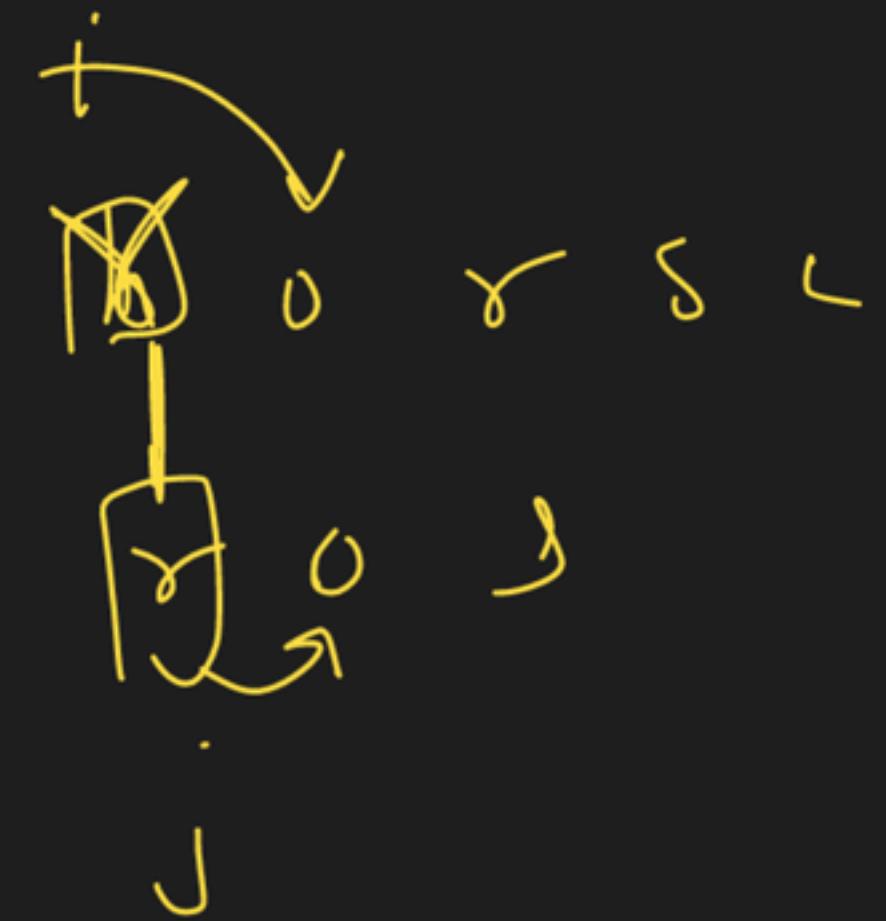
$s$

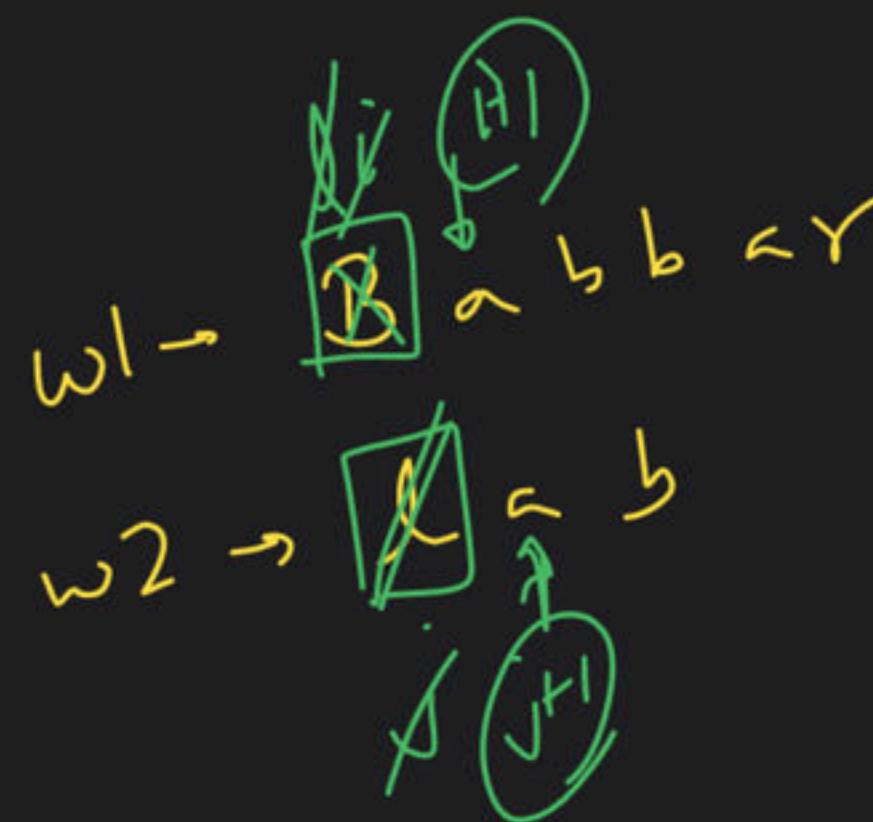
$j$

replace

w1 →

w2 →



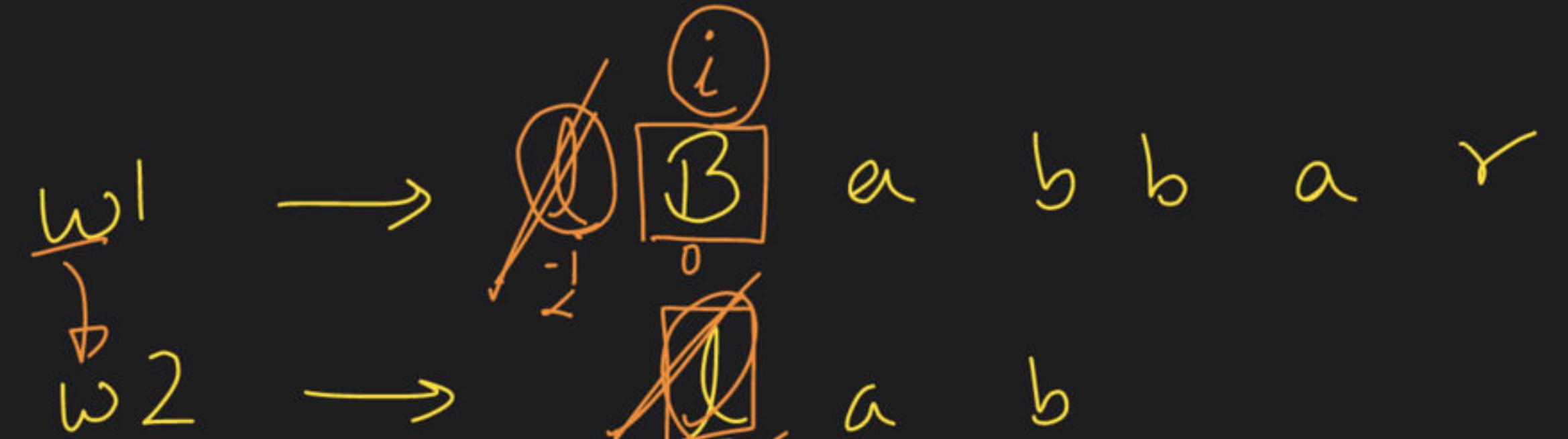


The diagram shows three paths from state  $i$  to state  $j+1$ :

- Upward:** Labeled  $t_{\text{up}}$ , represented by a green arrow pointing upwards.
- Rightward:** Labeled  $\delta_{\text{right}}$ , represented by a green arrow pointing right.
- Replace:** Labeled  $\gamma_{\text{replace}}$ , represented by a green arrow pointing right, with a green oval labeled  $\min$  below it.

Each path leads to a target state represented by an oval:

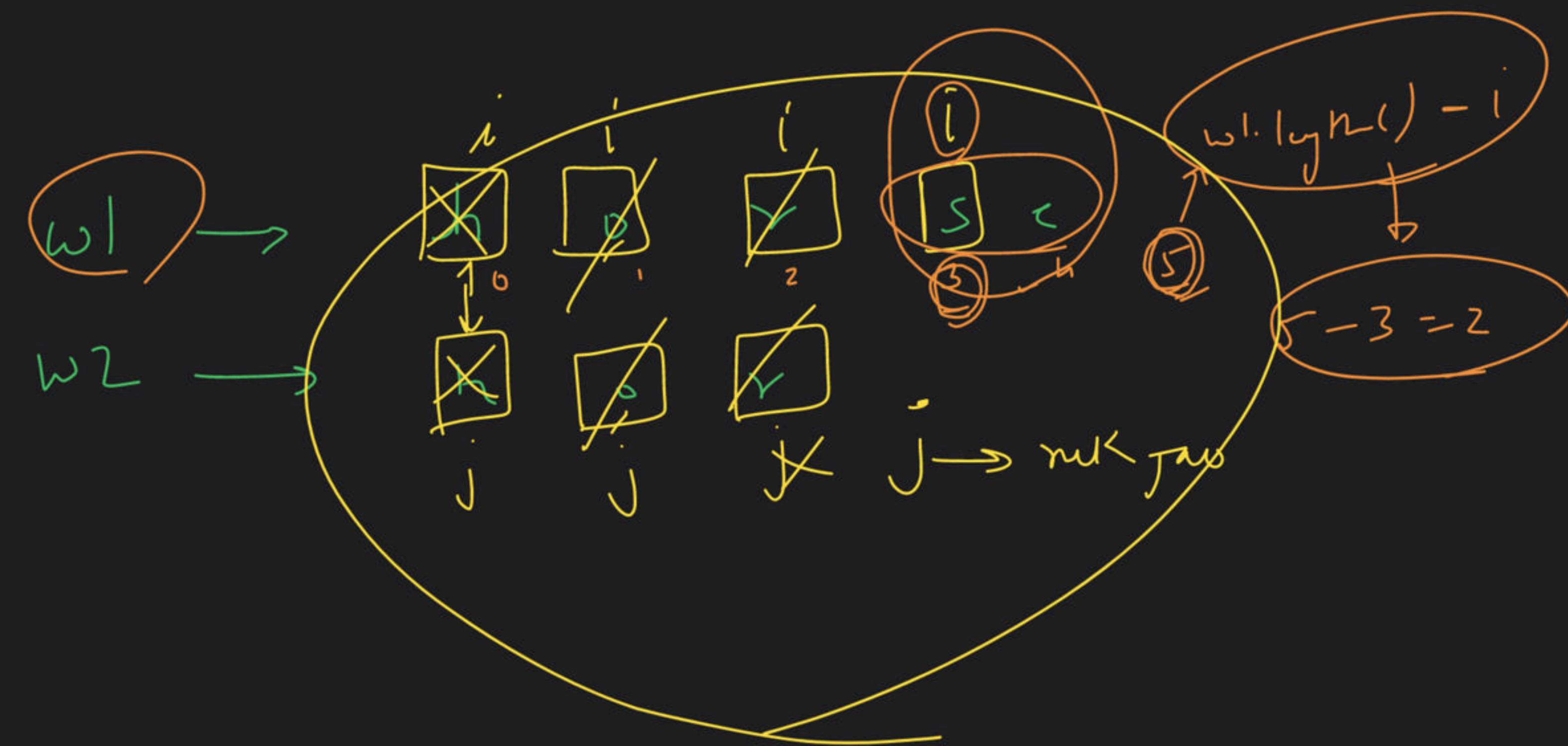
- Upward:** An orange oval containing  $i$ ,  $j+1$ , and  $|$ .
- Rightward:** A yellow oval containing  $i+1$ ,  $j$ , and  $|$ .
- Replace:** A green oval containing  $i+1$ ,  $j+1$ , and  $|$ .



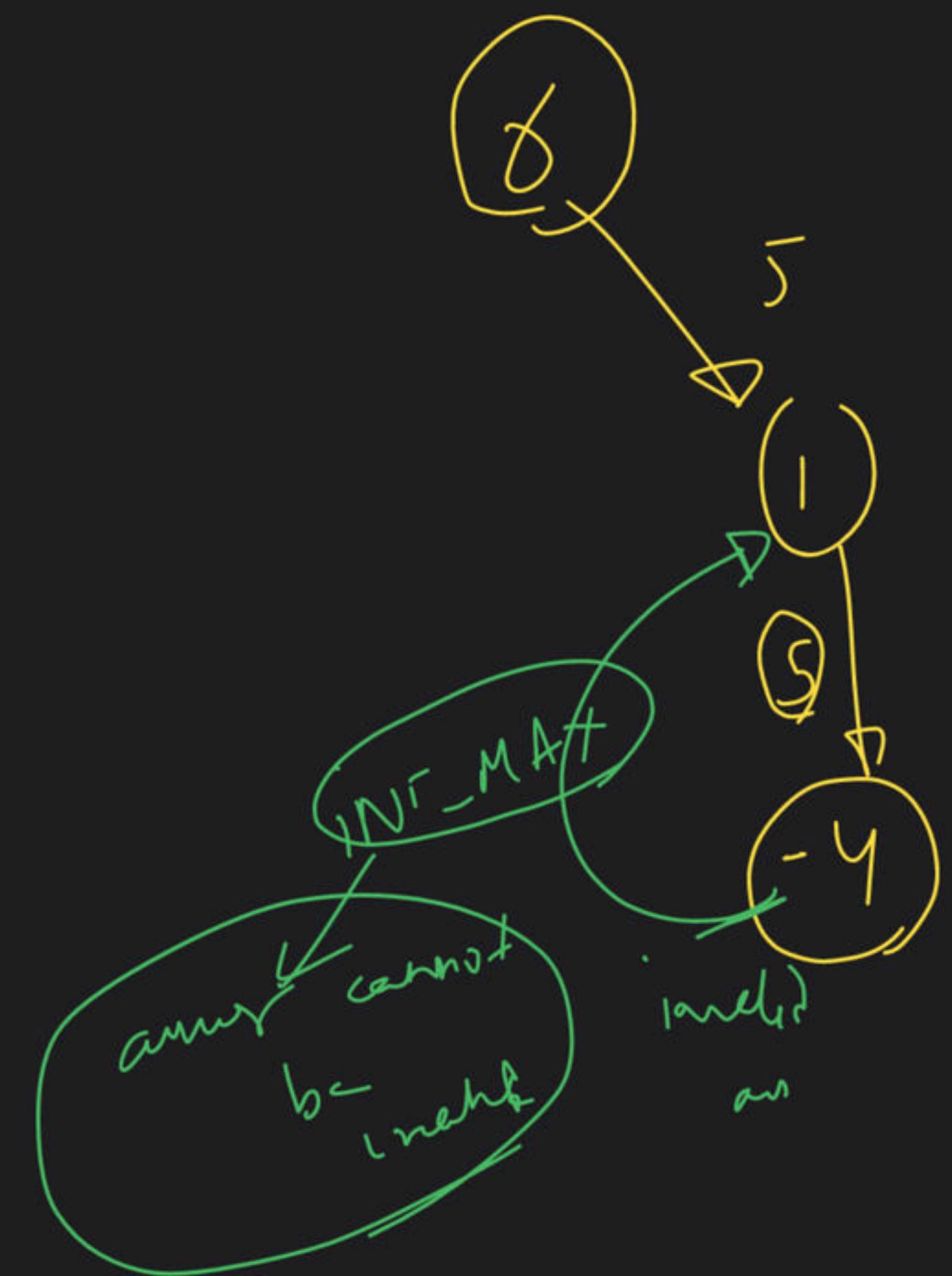
The diagram consists of several parts:

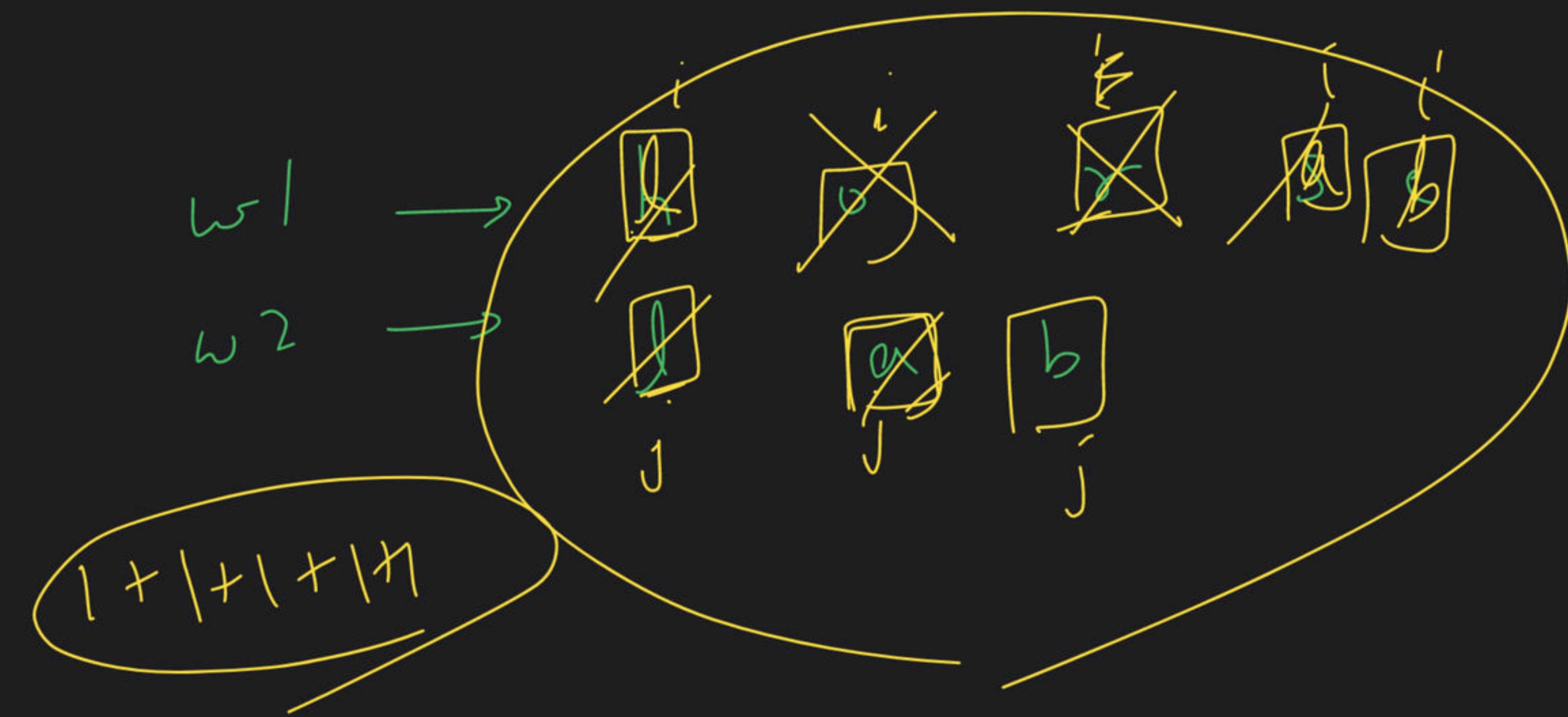
- A large orange circle at the top left contains the text  $\beta \mid = l$ .
- To the right of the circle, an arrow points to the text "N, Rath" followed by an arrow pointing to the letter "n".
- Below the circle, there is a yellow oval containing the letter "m" with an arrow pointing to it from the right.
- On the left side, there is a green circle containing the letter "w" with an arrow pointing to it from the right, and below it, another green circle containing the letter "w" with an arrow pointing to it from the right.
- In the center, there is a yellow oval containing the letter "l" with an arrow pointing to it from the right.
- Below the center oval, there is a yellow oval containing the letter "a" with an arrow pointing to it from the right.
- Below the "a" oval, there is a yellow oval containing the letter "a" with an arrow pointing to it from the right.
- Below the "a" oval, there is a yellow oval containing the letter "b" with an arrow pointing to it from the right.
- Below the "b" oval, there is a yellow oval containing the letter "b" with an arrow pointing to it from the right.
- Below the "b" oval, there is a yellow oval containing the letter "a" with an arrow pointing to it from the right.
- Below the "a" oval, there is a yellow oval containing the letter "v" with an arrow pointing to it from the right.



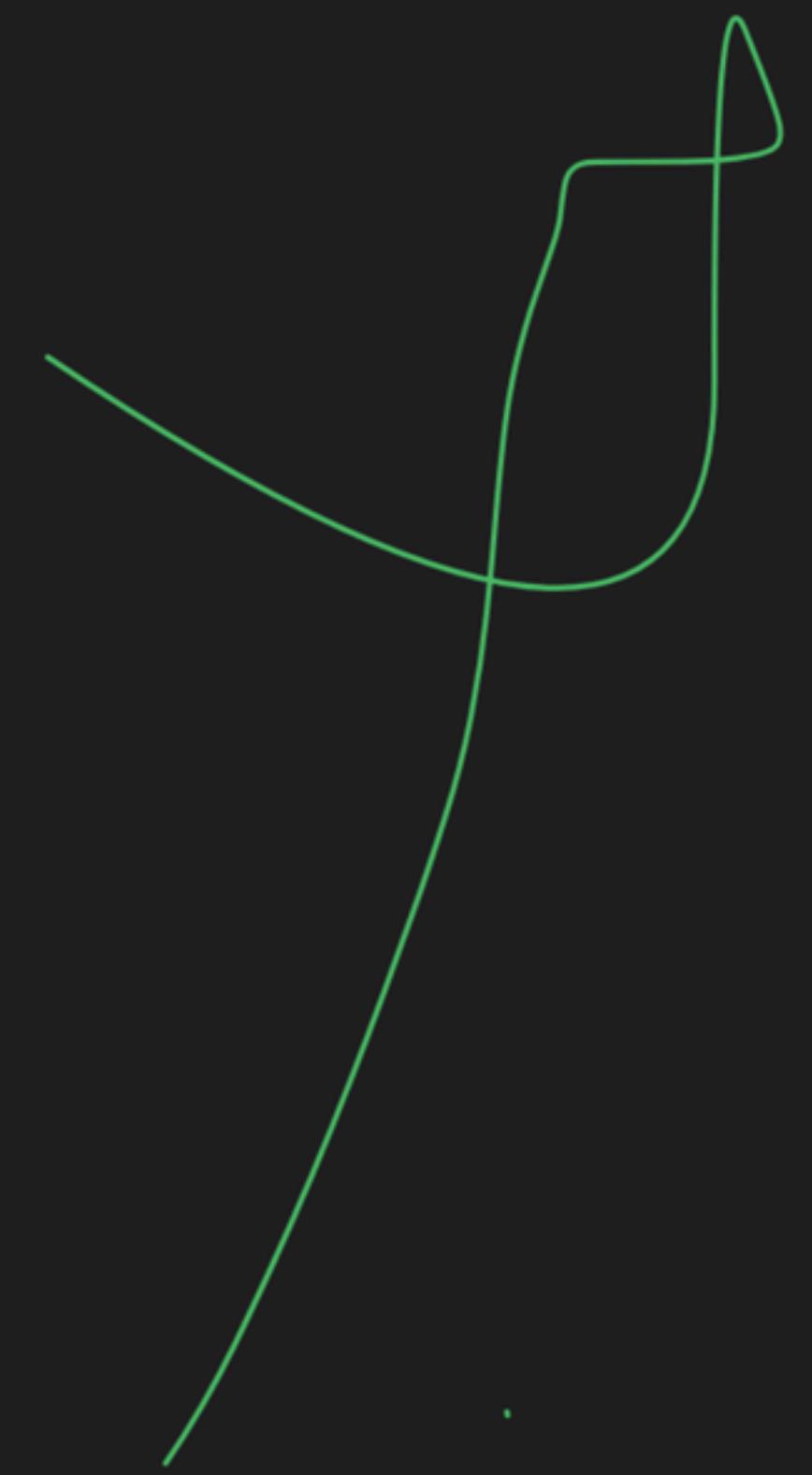


5, 2, 2







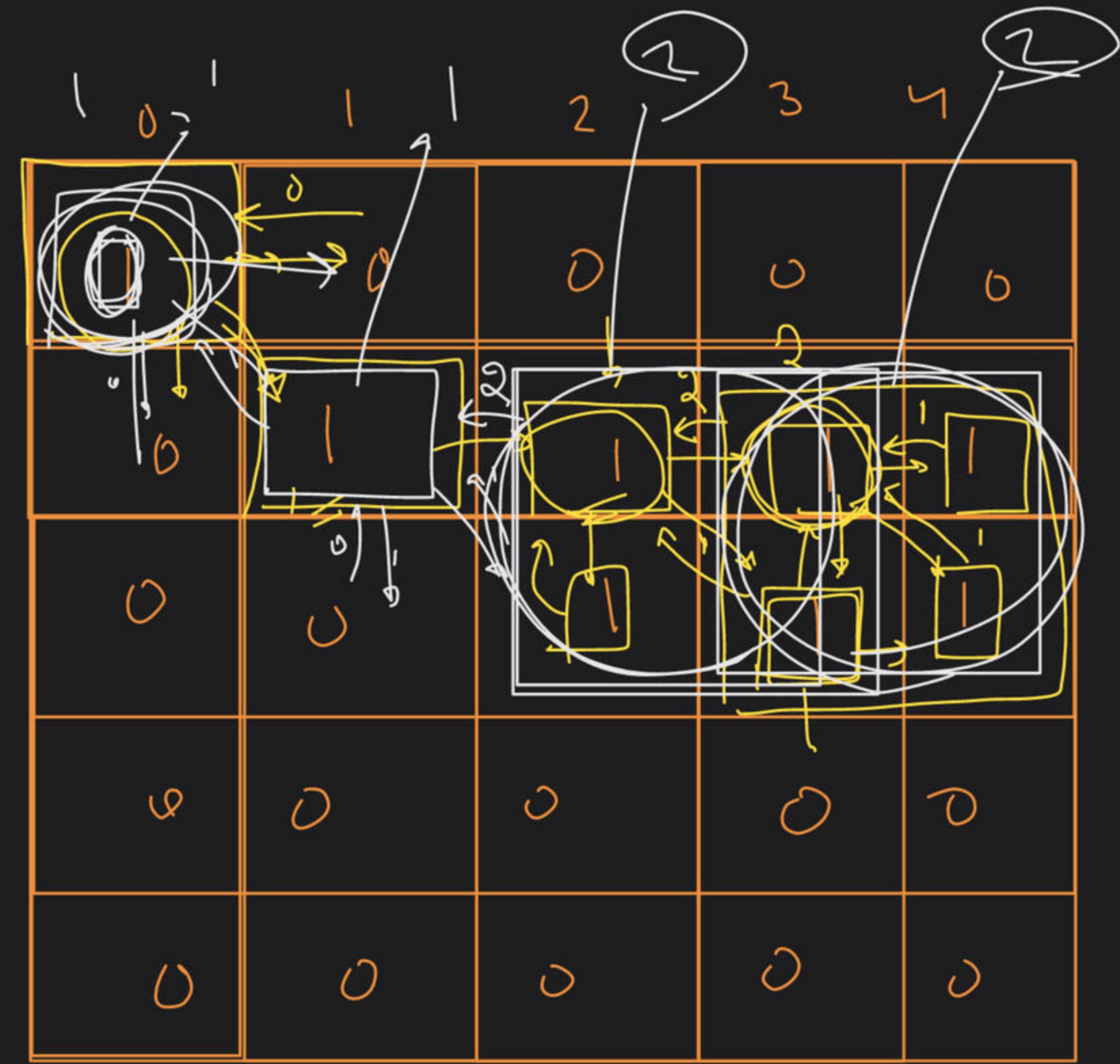


	0	1	2	3
0				
1				
2	\	J	J	
3	(	)	6)	



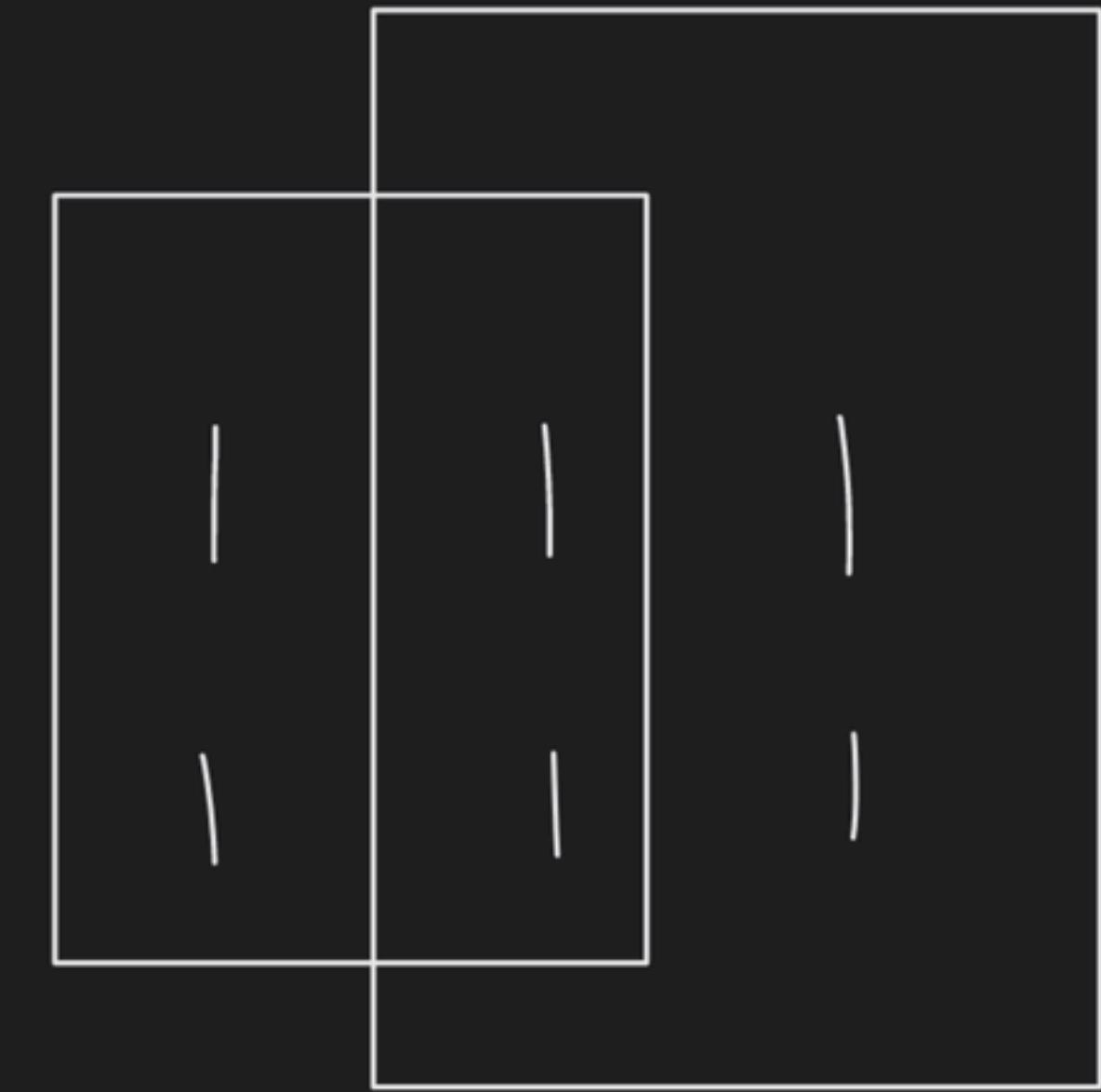
3  
4

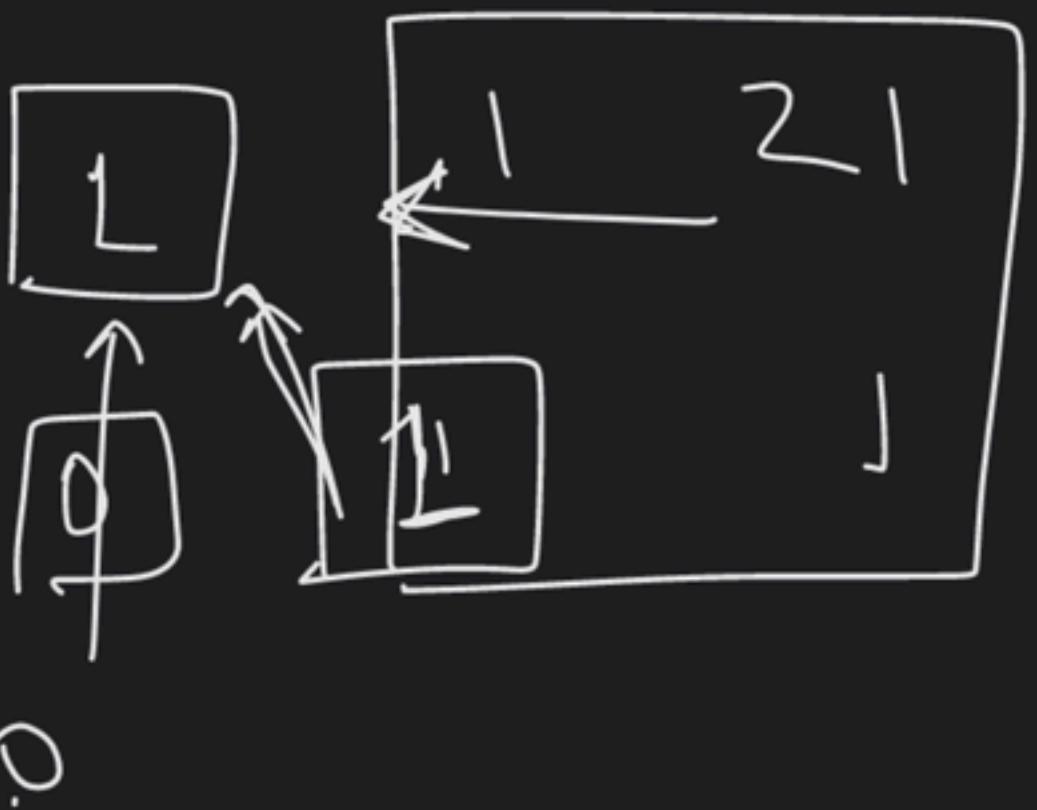
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