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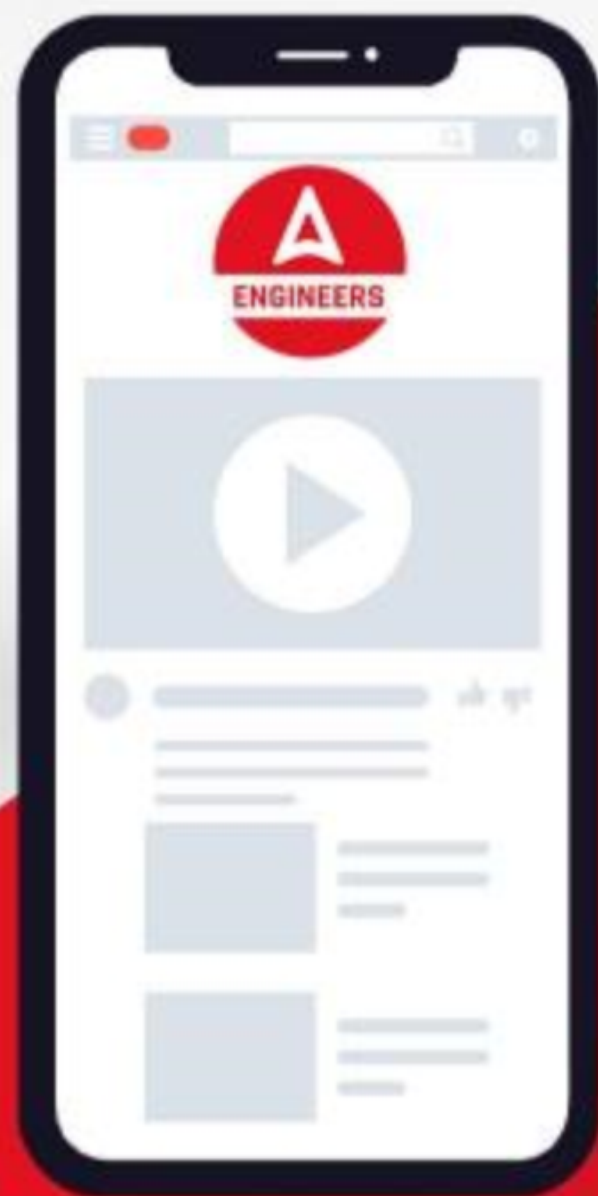


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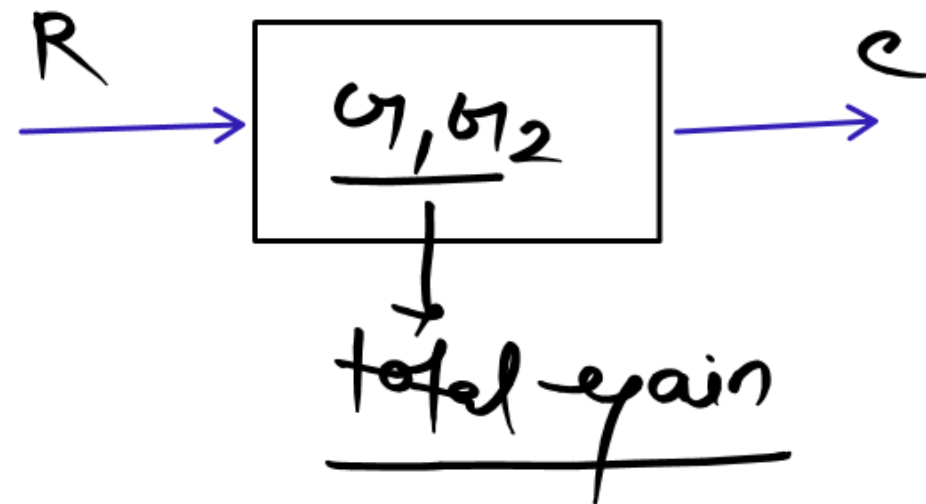
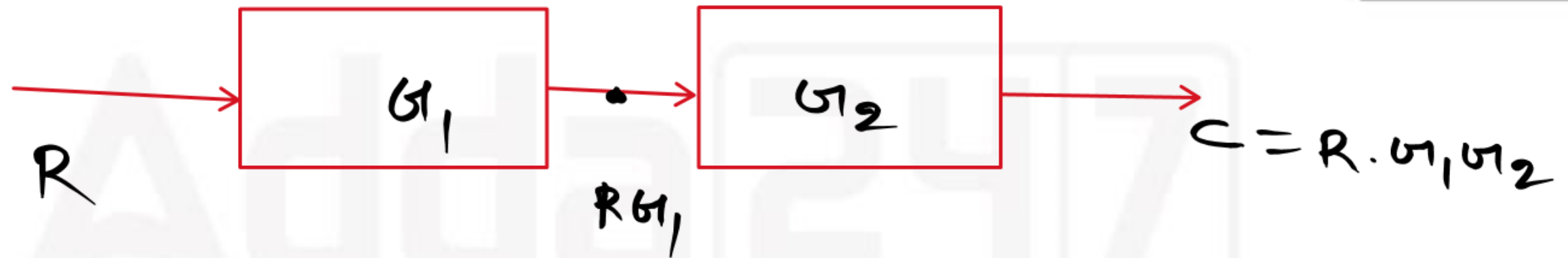
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Control system

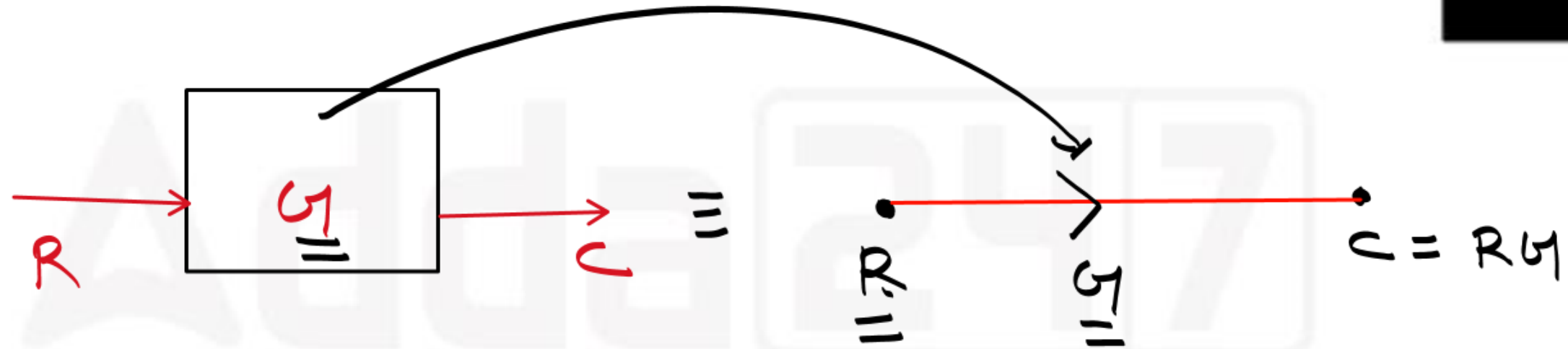
* two blocks are in series: \rightarrow



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Signal flow graph

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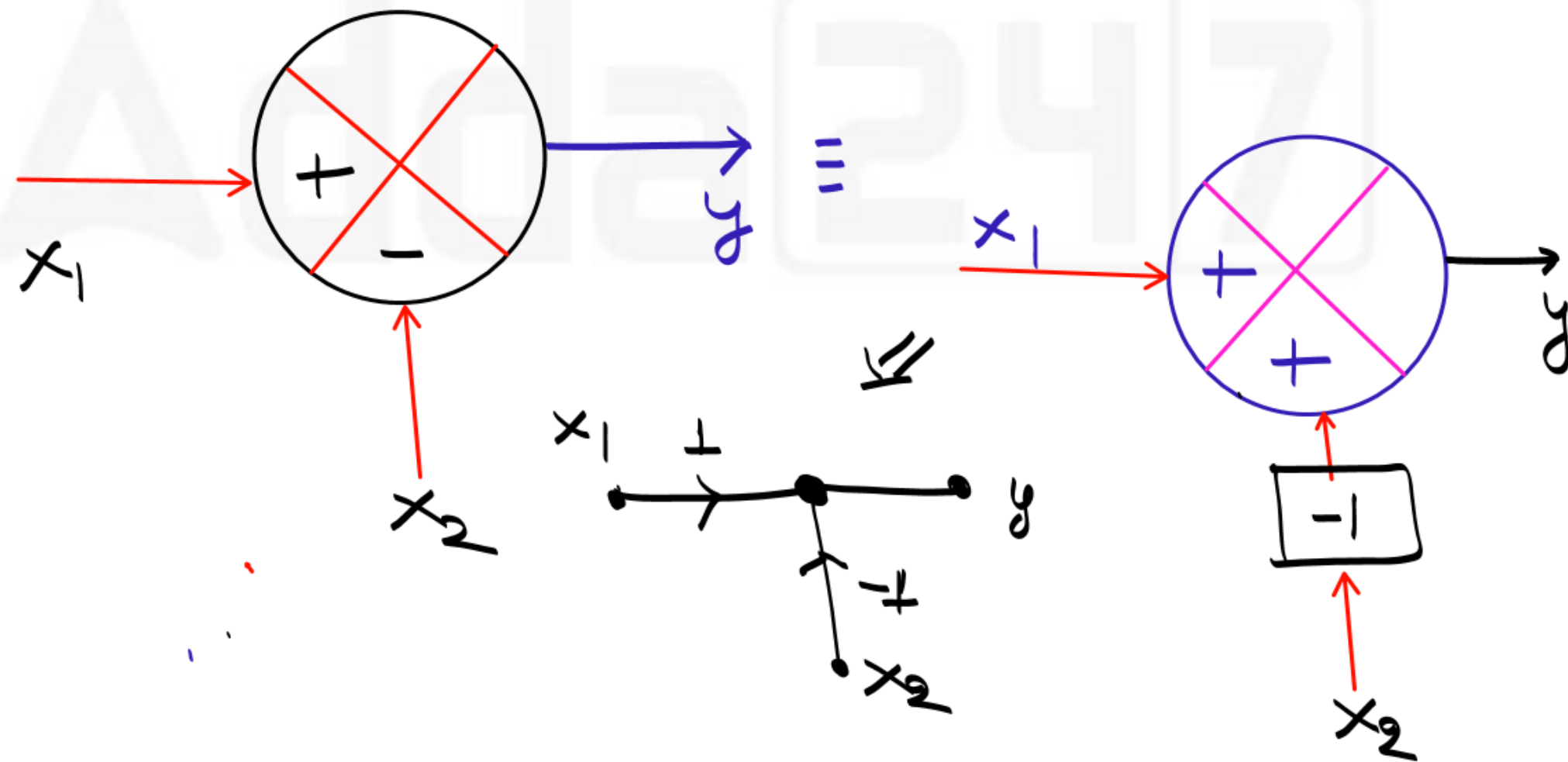
block-diagram

Signal flow graph

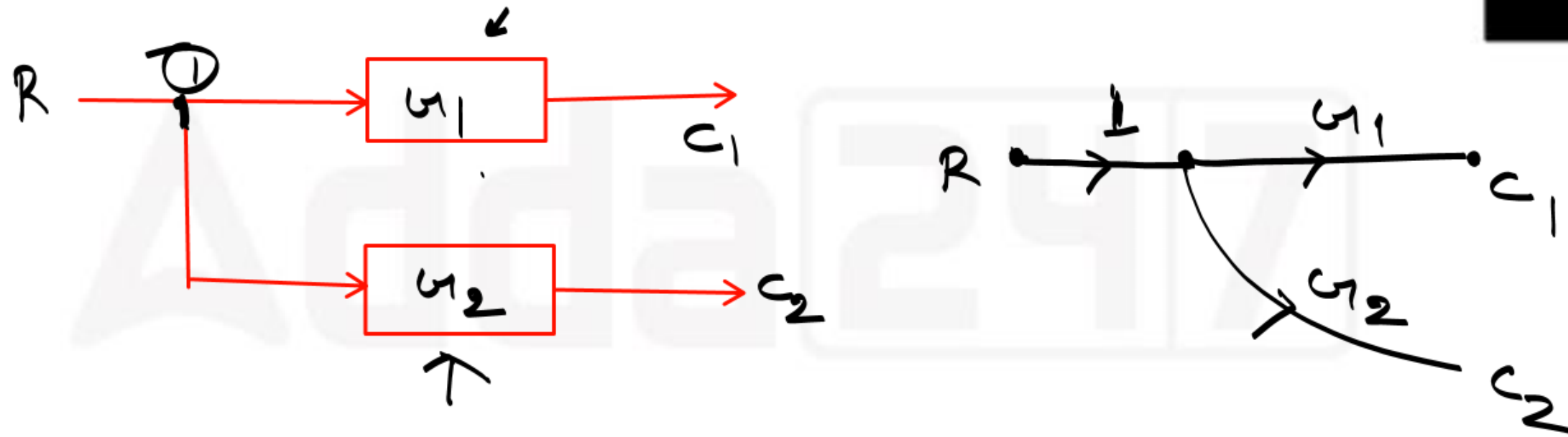
Summing point

take (-) sign out of the summing pt

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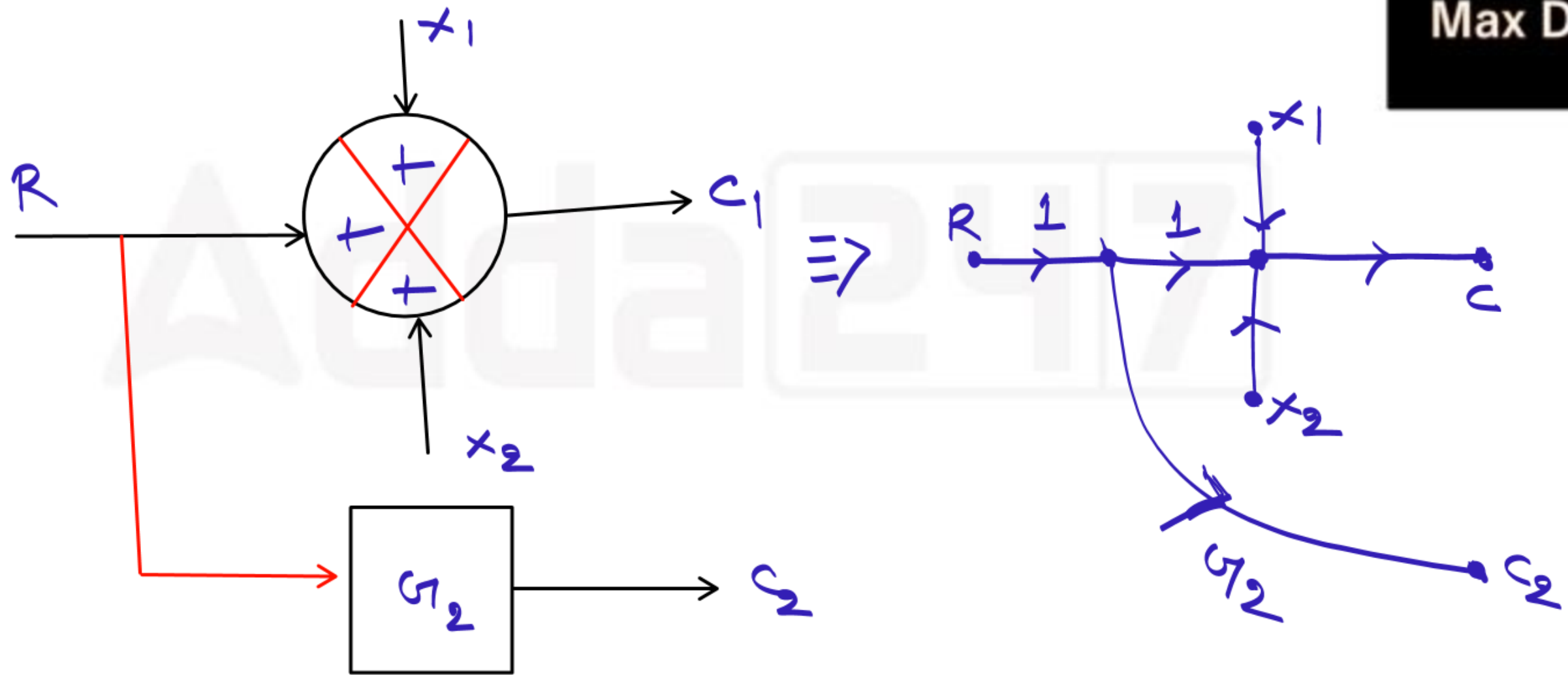
take-off point
~~~~~



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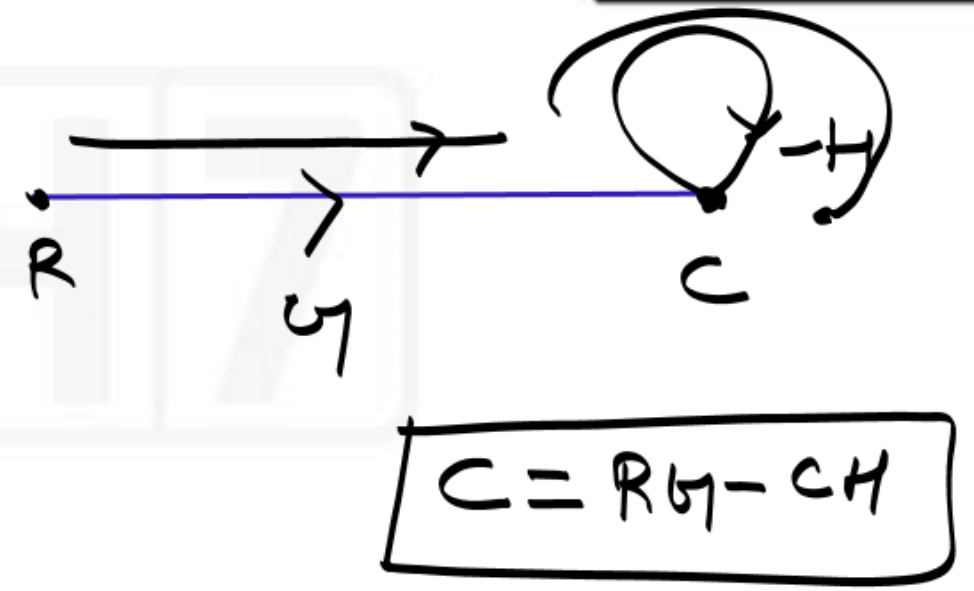
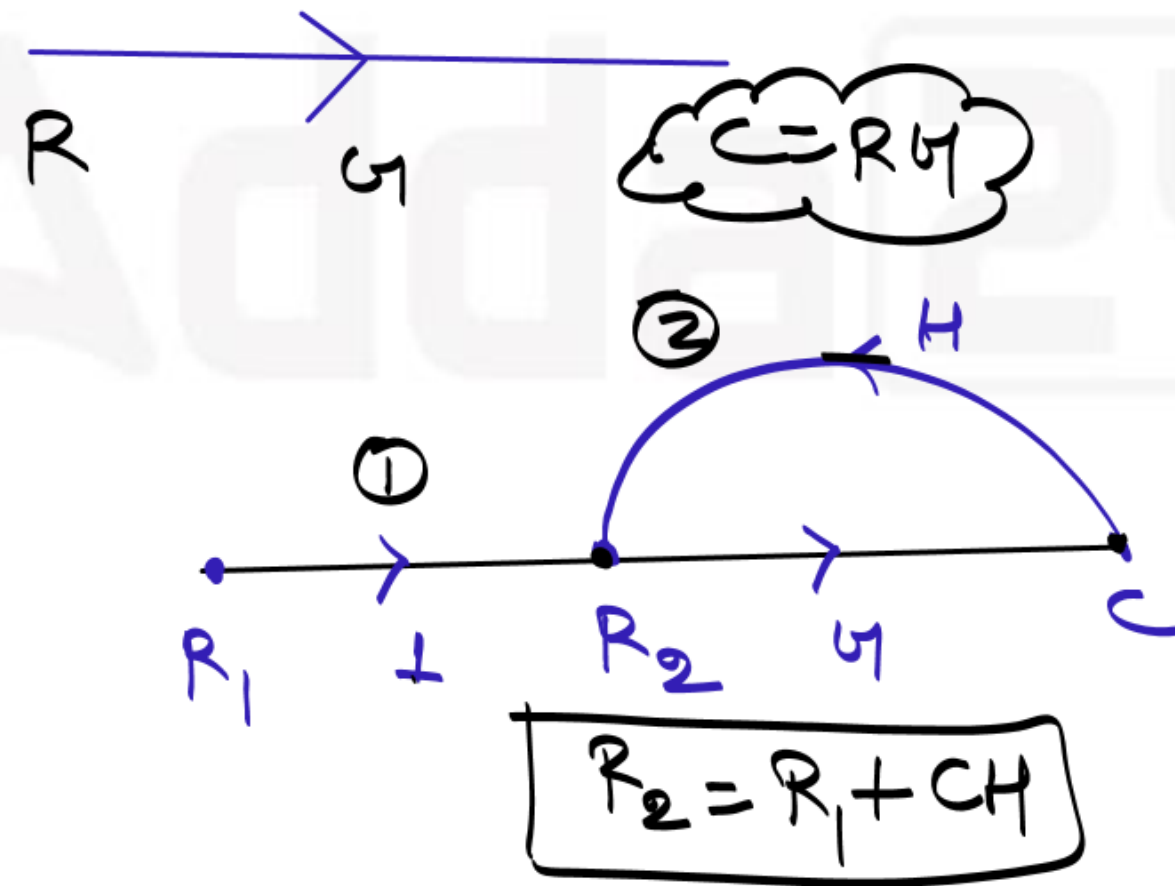
Signal flow graph



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Signal flow graph

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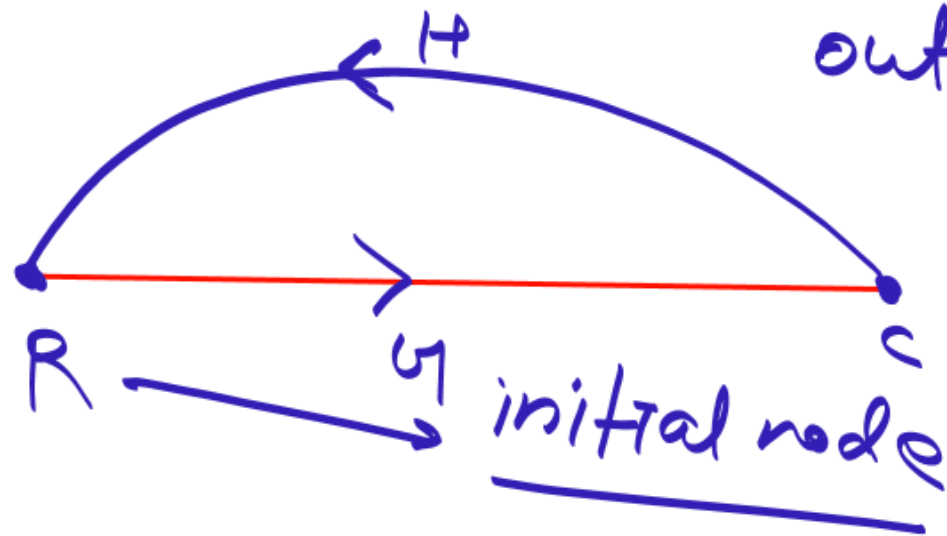


input node & initial node

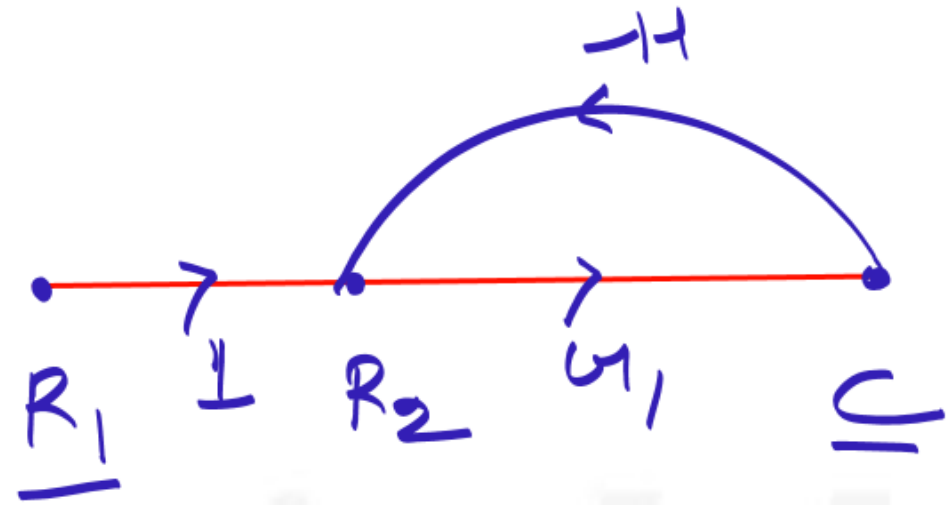
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Input node:  $\rightarrow$  Node where only outgoing line exist.

Initial node:  $\rightarrow$  where Incoming as well as outgoing both line exist.

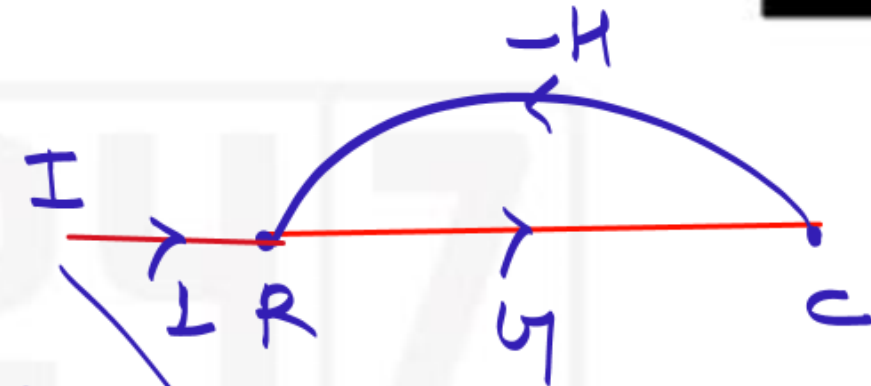


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$R_1 \rightarrow$  input node

$R_2 \rightarrow$  initial node



$I \rightarrow$  Input node



Mason's gain formula



↳ to calculate transfer function from given signal flow graph.

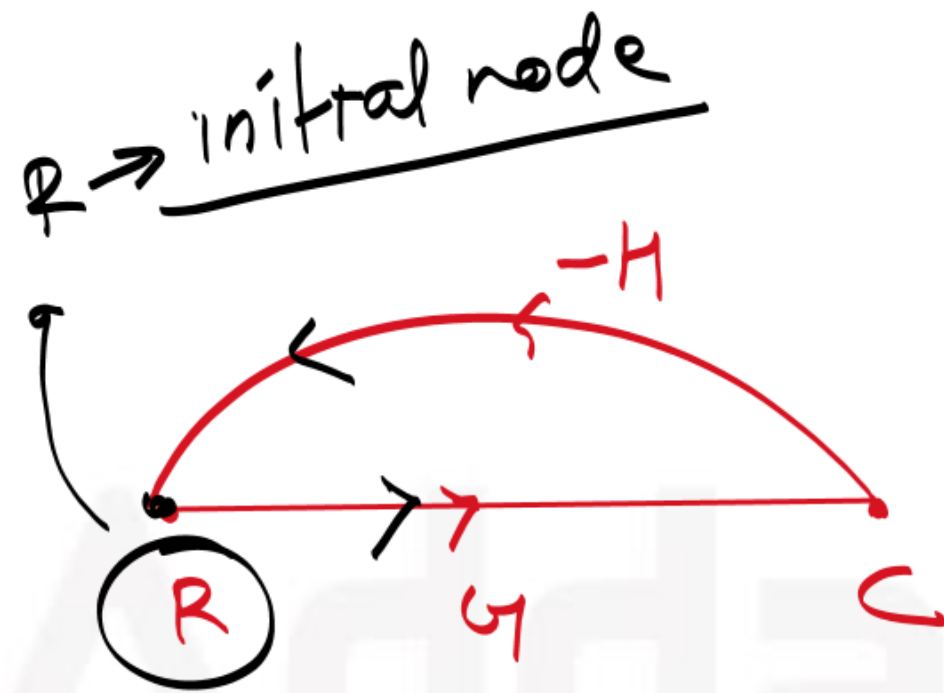
→ 
$$\frac{\text{output node}}{\text{Input node}}$$

→ 
$$\frac{\text{intermediate node}}{\text{Input node}}$$

$$\frac{\text{output node}}{\text{initial node}}$$

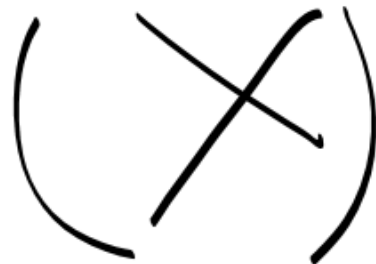
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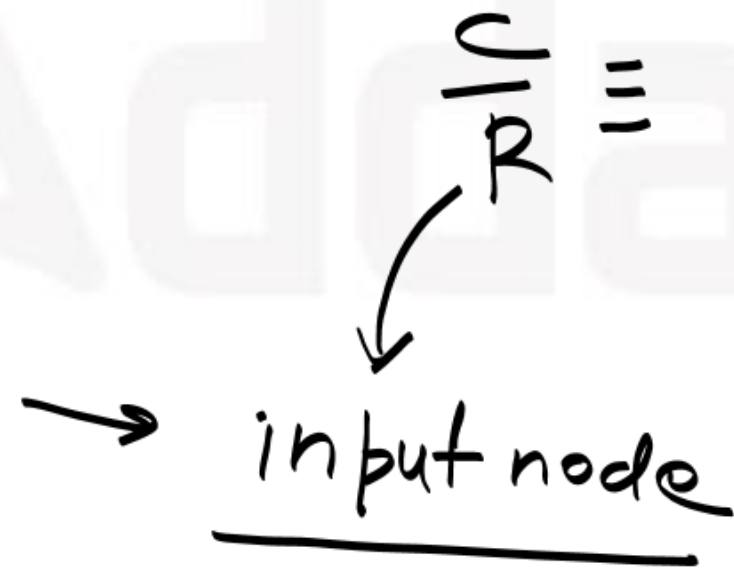
99%

$\frac{C}{R}$   $\rightarrow$   $\frac{\text{output node}}{\text{input node}}$  by using mason's gain formula?  
 $R \neq \text{input node}$



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Mason's gain formula



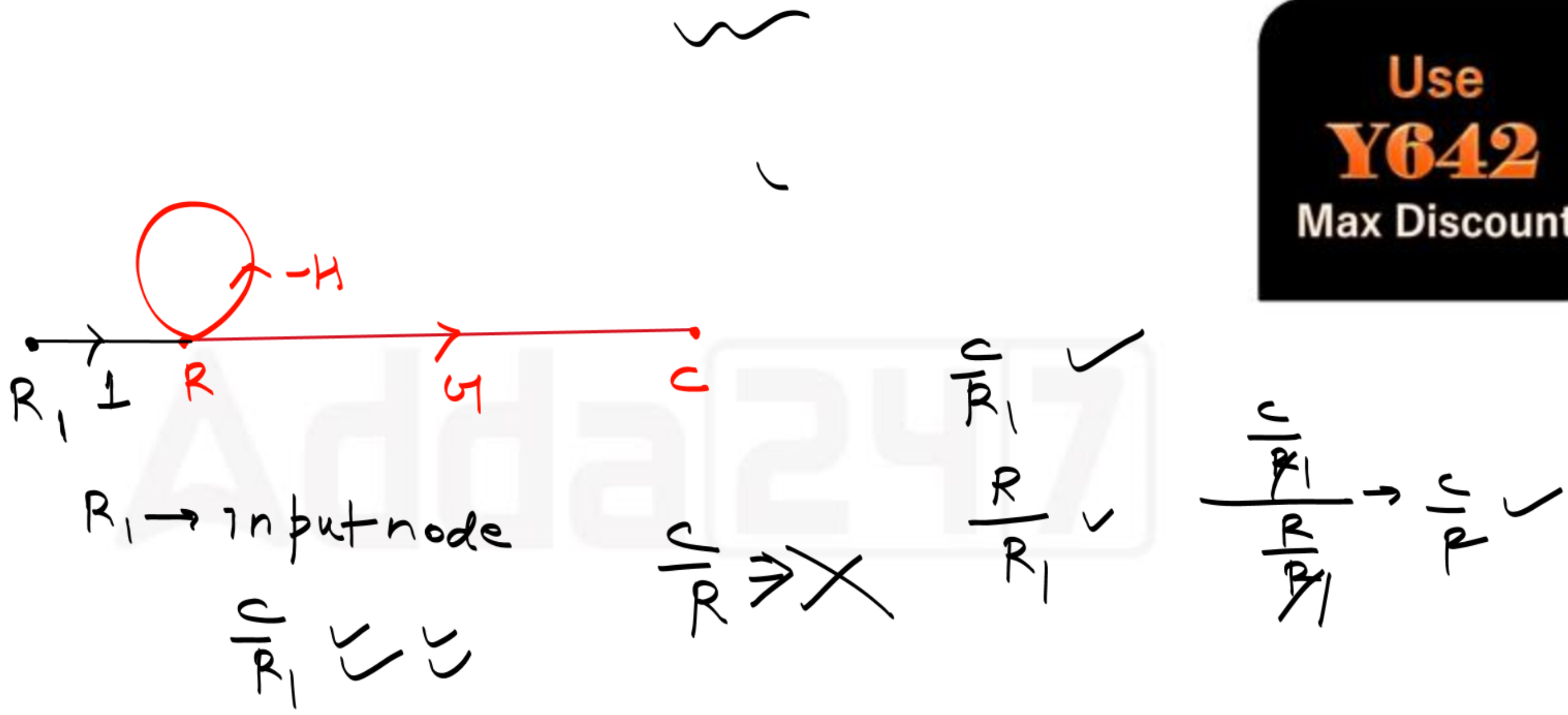
$$\frac{\sum_{k=1}^n P_k \Delta_k}{\Delta} = \frac{P_1 \Delta_1 + P_2 \Delta_2 + \dots}{\Delta}$$



$R \neq$  input node

$R \Rightarrow$  initial node

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