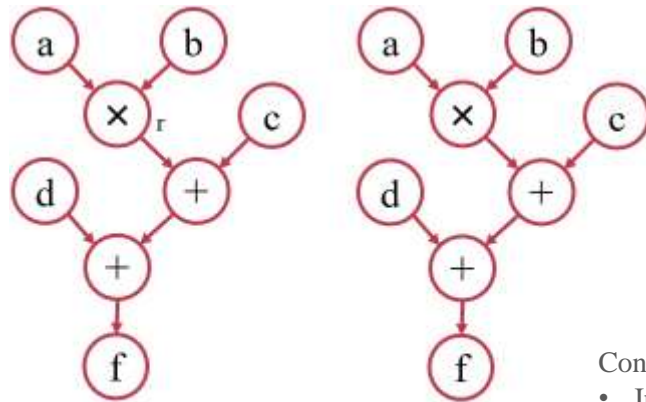


# Algorithm Design: Construction of RNode Graph

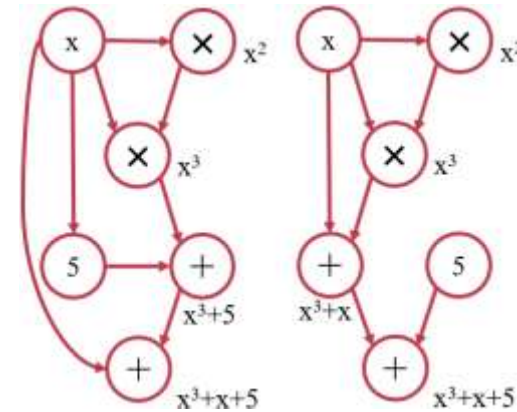
The design of the RNode data structure minimizes changes to the overall structure.



$a \times b = r$ ,  
 $r + c + d = f$   $\xrightarrow{\text{Constraint Composition}}$   $a \times b + c + d = f$

- Constraint composition will affect:
- Intermediate variable selection.
  - Quantity and form of constraints.
  - Variable mapping.

Structural differences of RNode Graph of different R1CS remain.



- Reason: Consecutive additions
- Left:  $(x^3 + x) + 5 = \text{output}$
  - Right:  $(x^3 + 5) + x = \text{output}$

Additional abstraction is necessary.