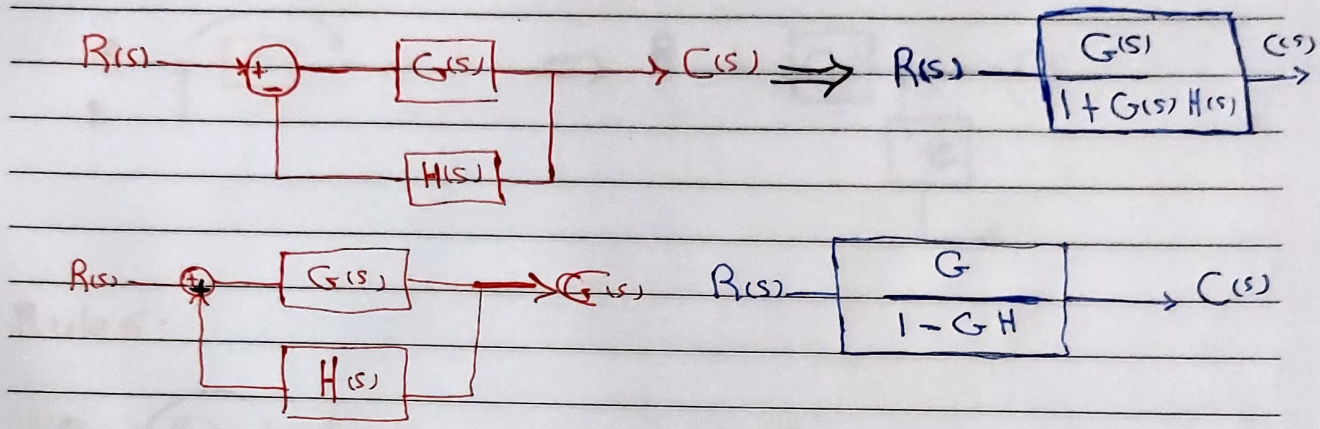
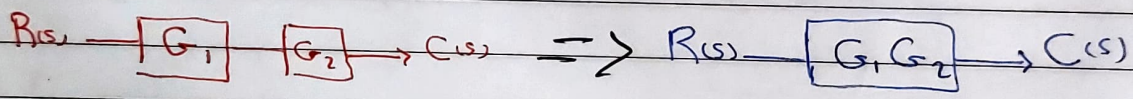
Block Diagram Reduction

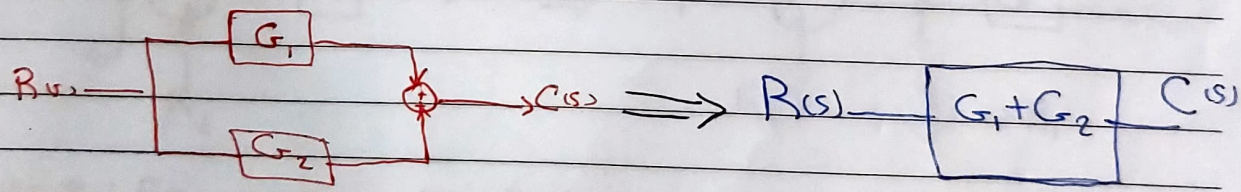
Rule 1 :



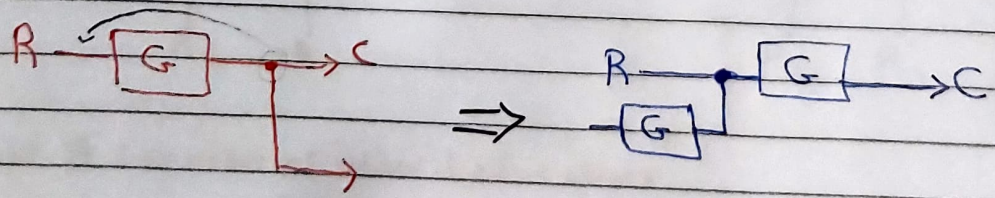
Rule 2 :



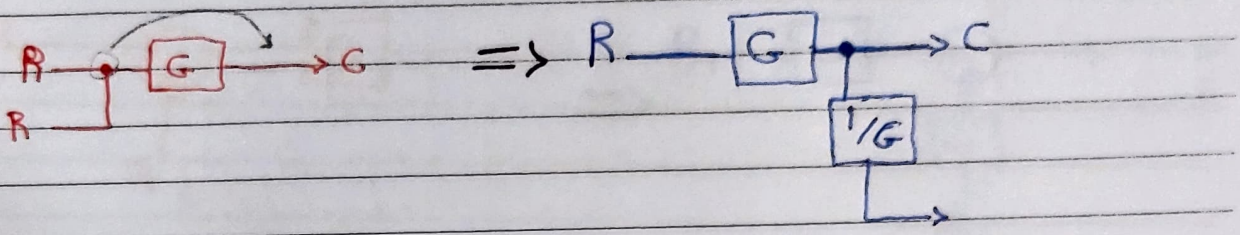
Rule 3 :



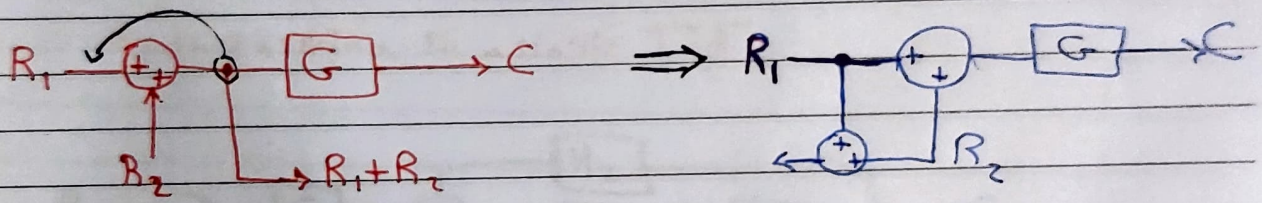
Rule 4 : Shifting of take off Point before a block



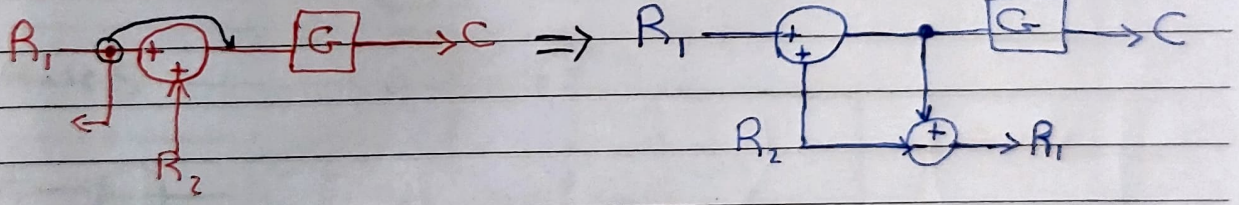
Rule 5:



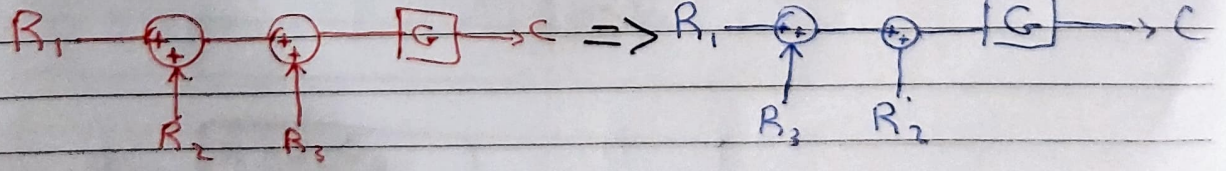
Rule 6:



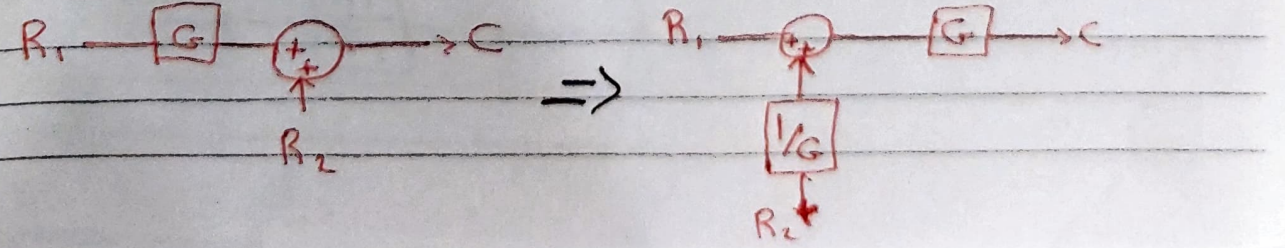
Rule 7:



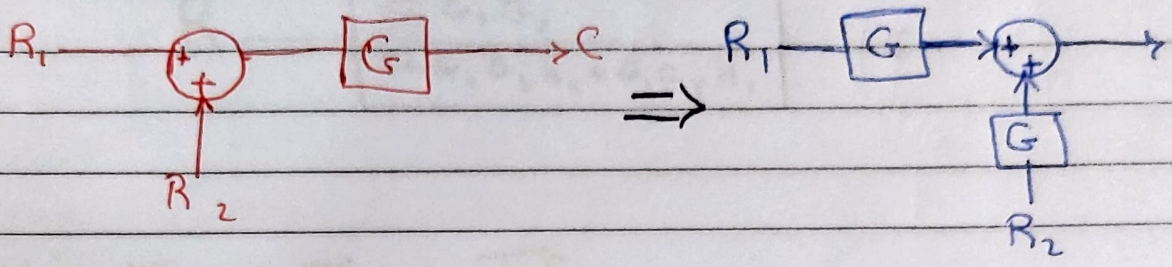
Rule 8 : Rearrangement of adders



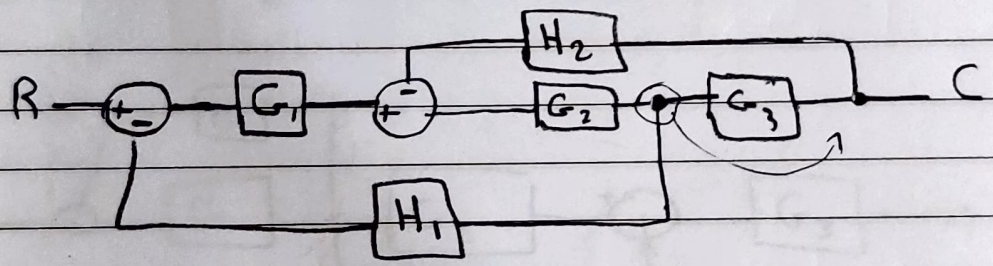
Rule 9 : shifting of adder before a block



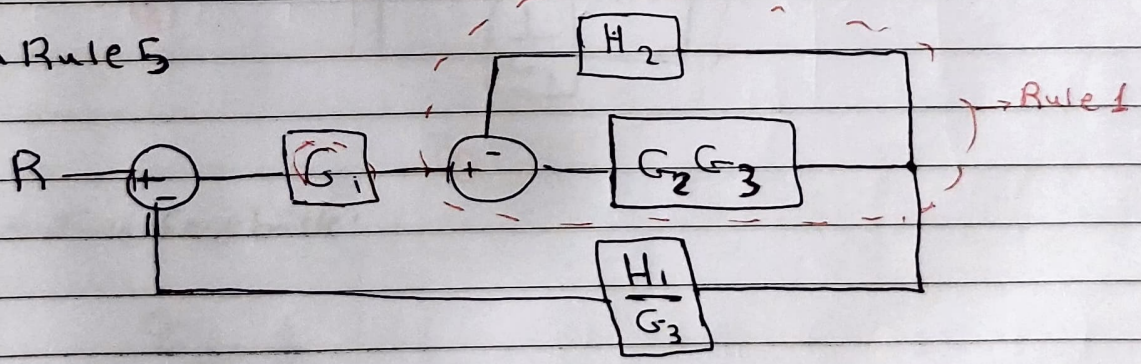
Rule 10: shifting of adder after a block

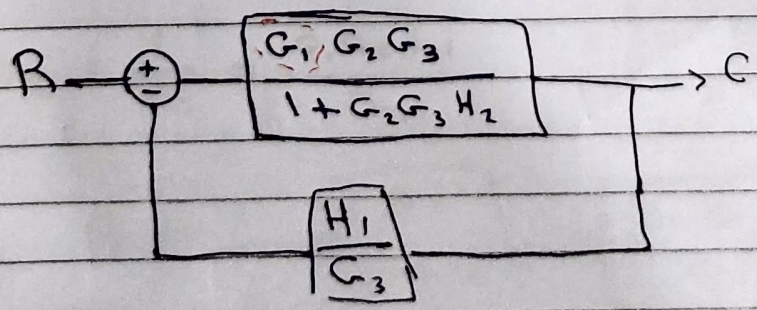


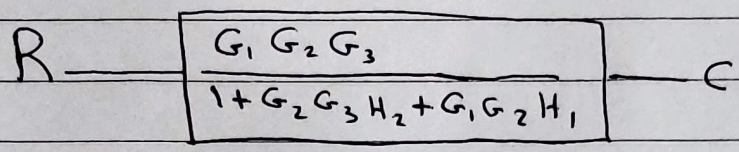
[1] Reduce system To a single T.F.



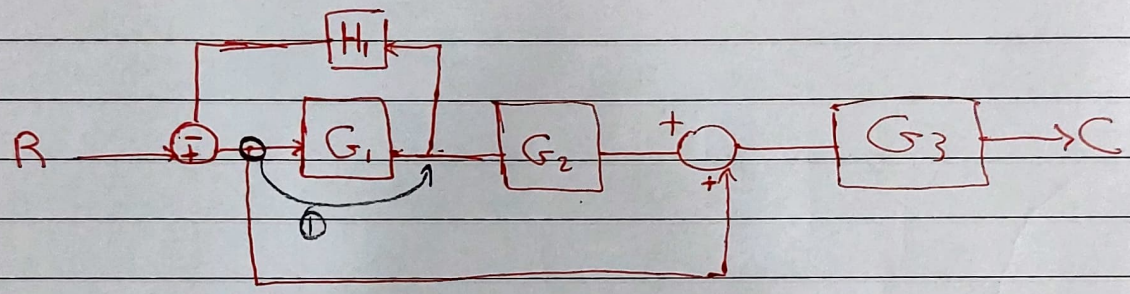
From Rule 5

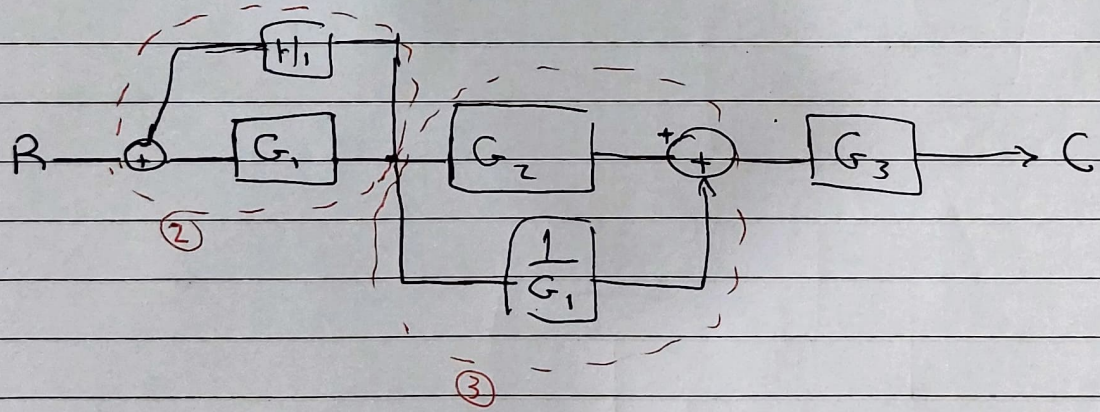






(2) Reduce the system to single T.F

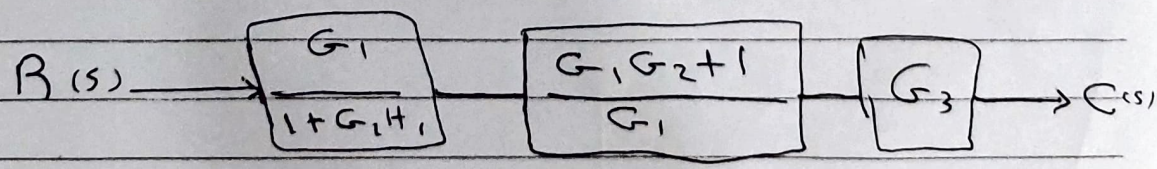


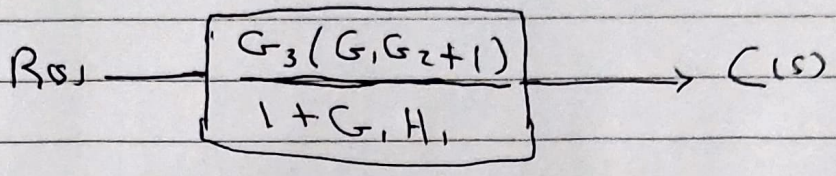


(2) negative feed back!

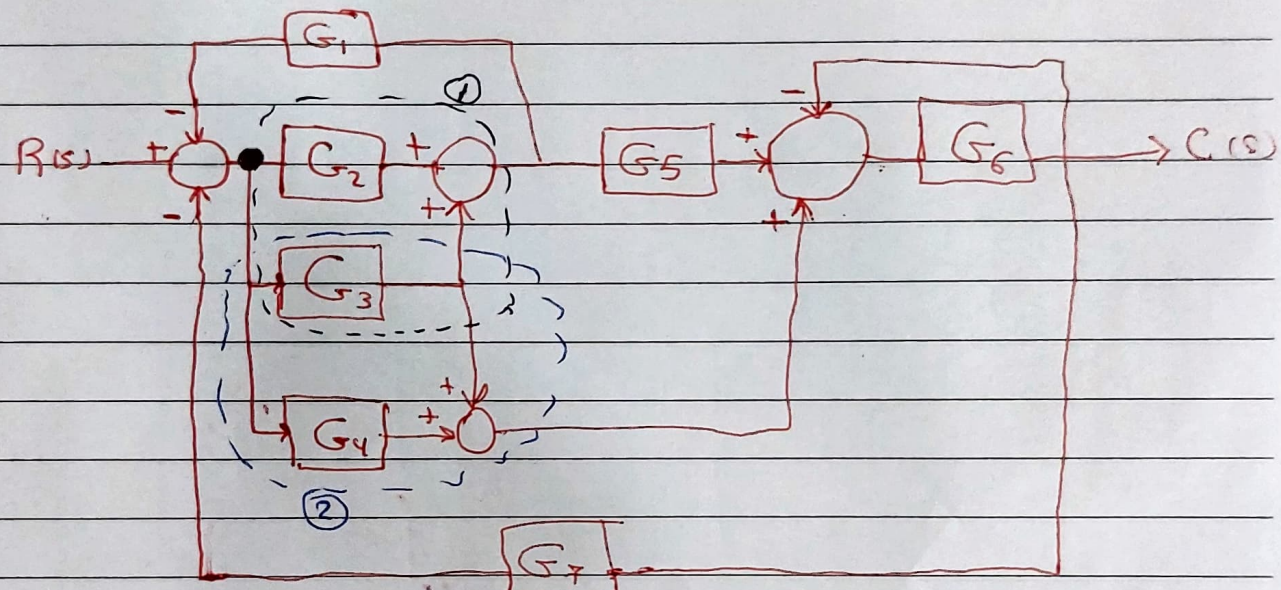
$$\frac{G_1}{1 + G_1 H_1}$$

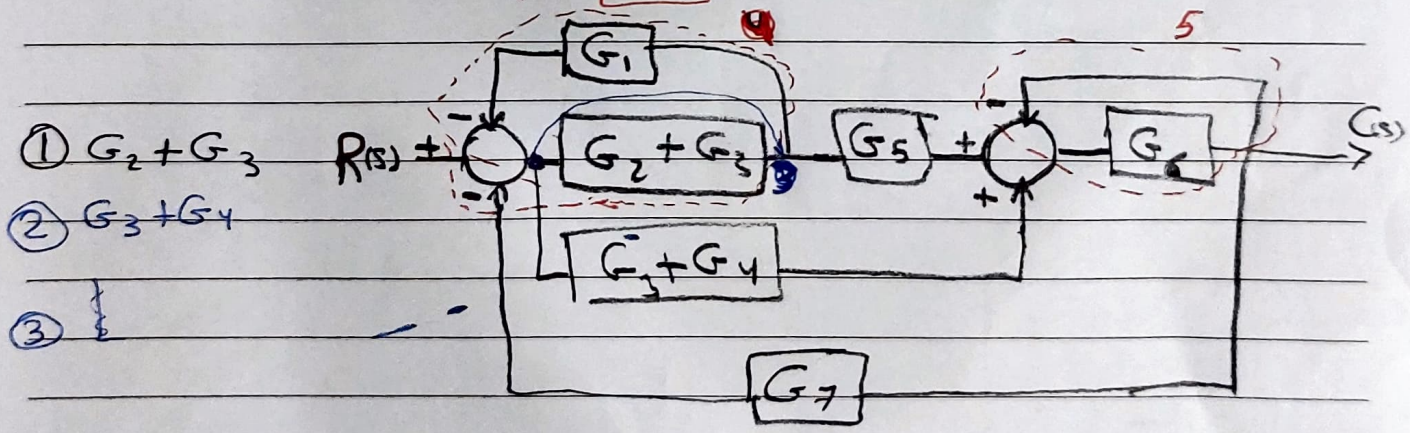
(3) $G_2 + \frac{1}{G_1} = \frac{G_1 G_2 + 1}{G_1}$

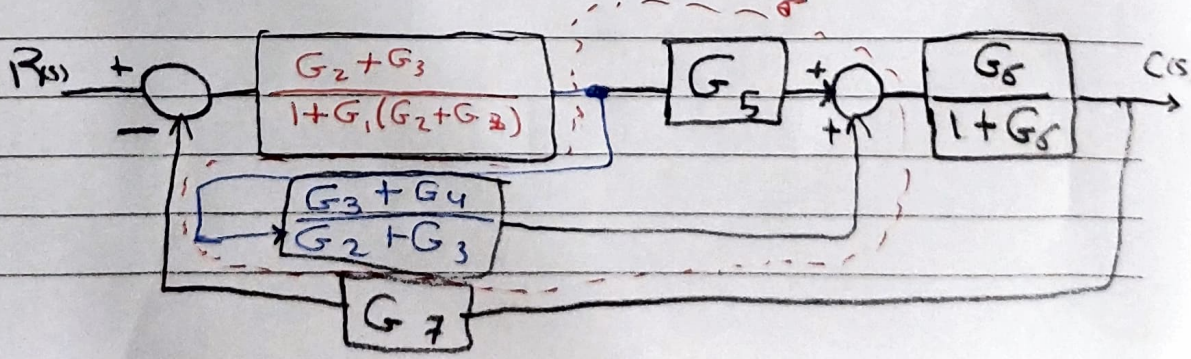


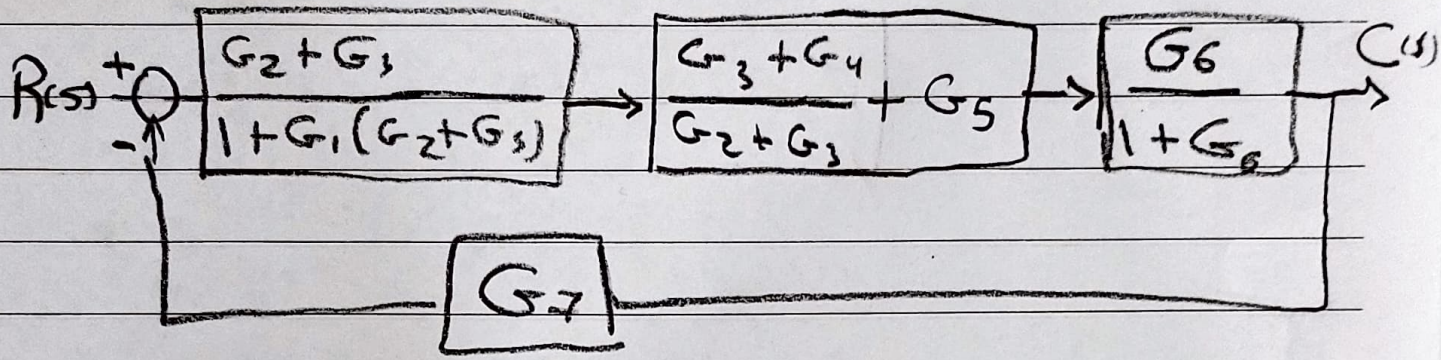


[3] Reduce The system to single T.F









$$\frac{R(s)}{} \quad \frac{G_6(G_3+G_4+G_5(G_2+G_3))}{G_6(G_3+G_4+G_5(G_2+G_3))+G_6G_7(G_3+G_4+G_5(G_2+G_3)}$$