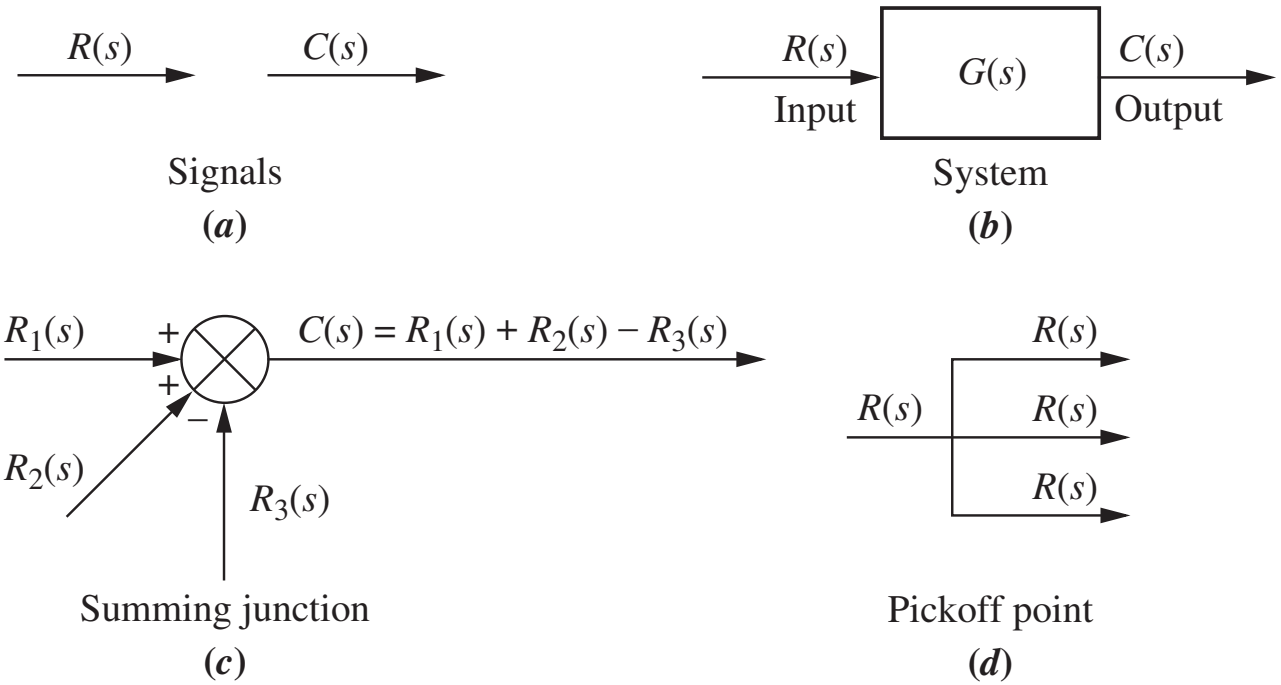
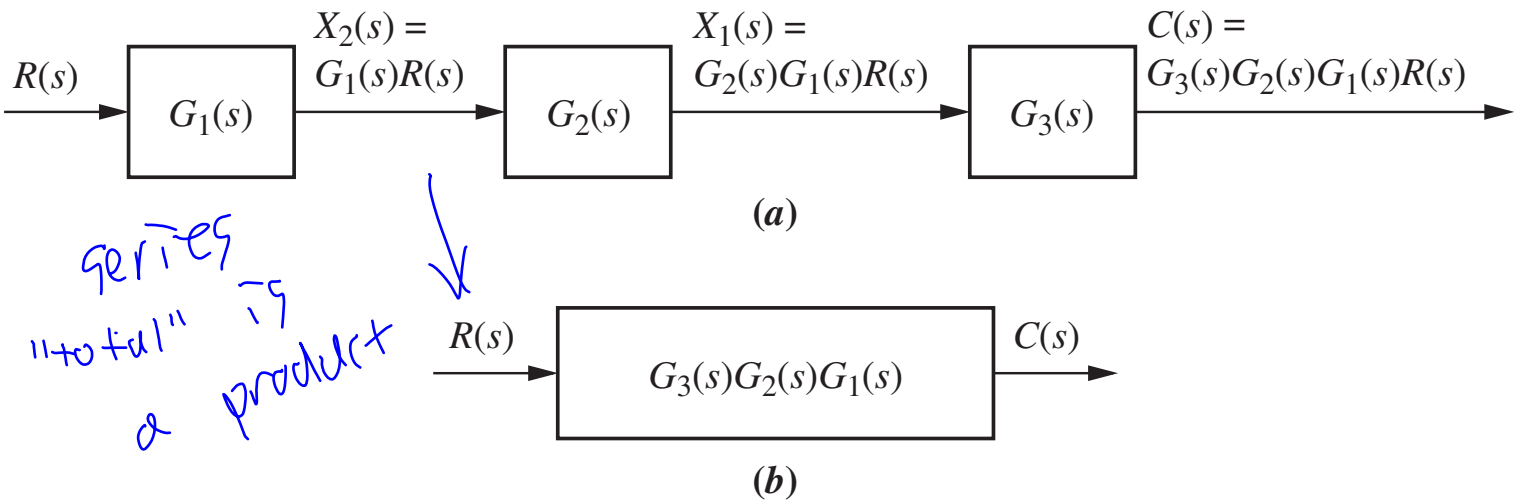
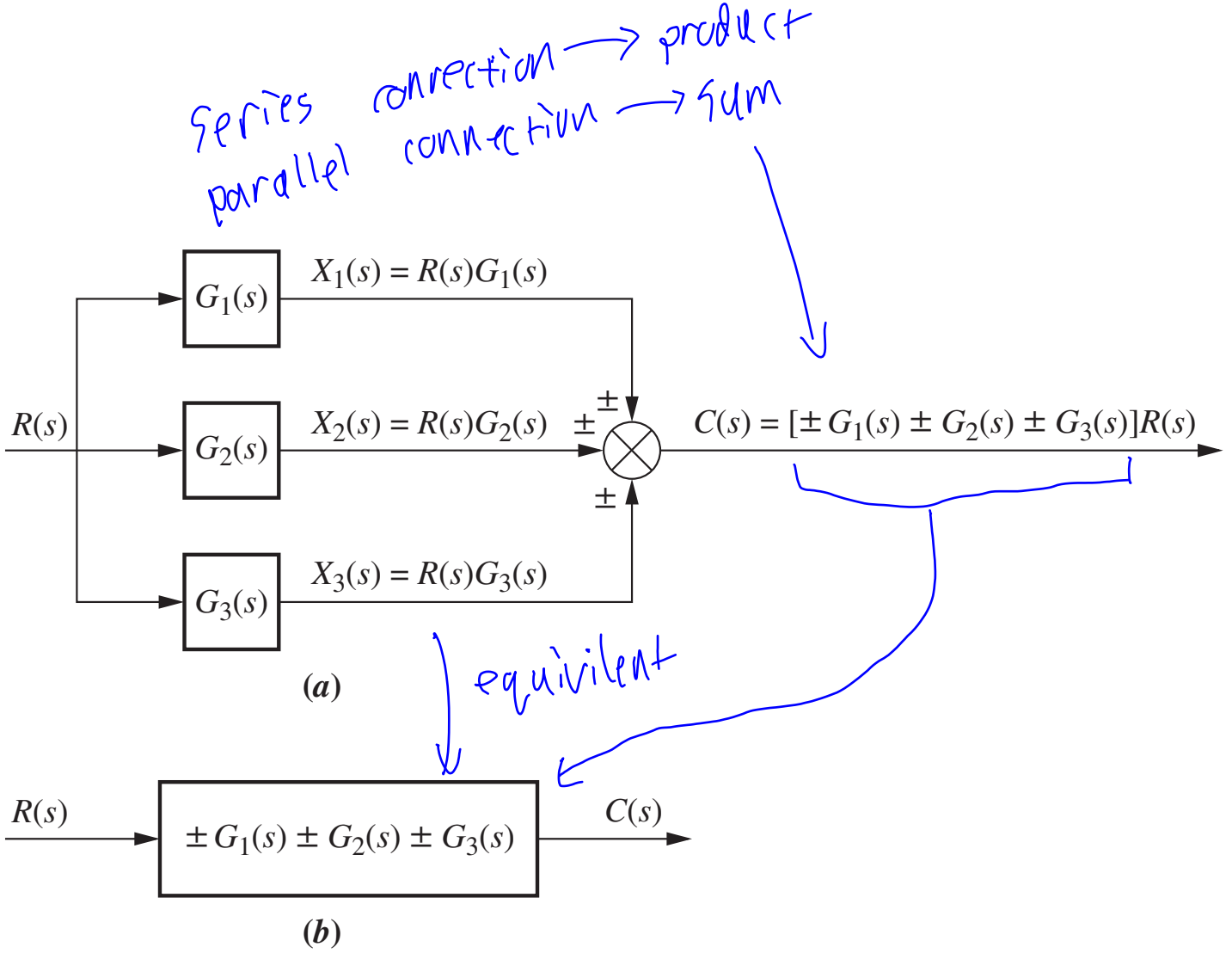


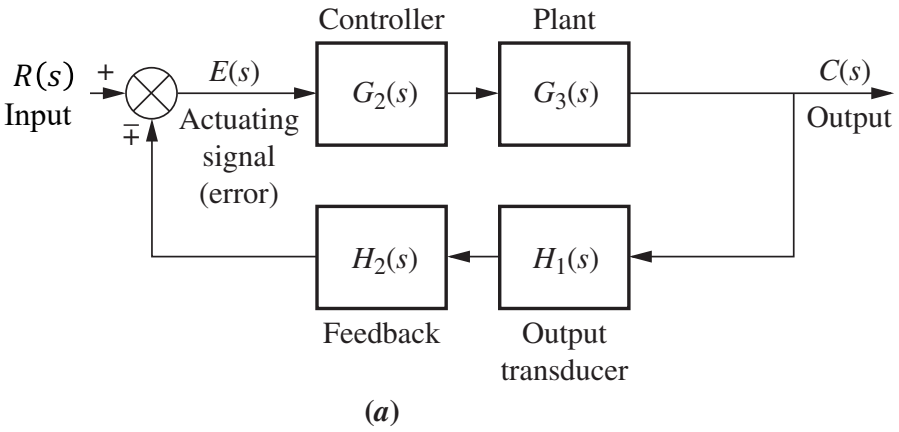
Components of a block diagram of a linear time-invariant system.



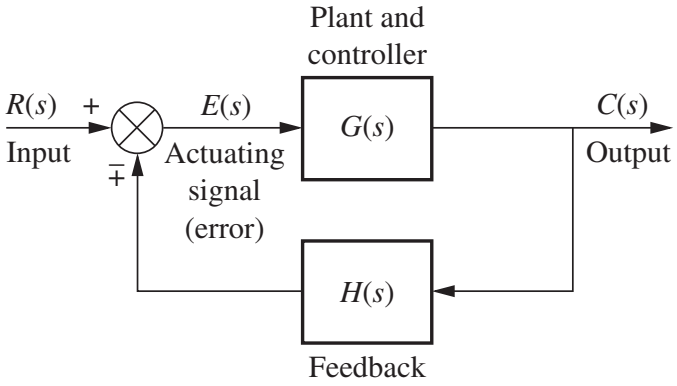
(a) Cascaded subsystems; (b) equivalent transfer function



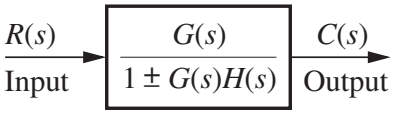
(a) Parallel subsystems; (b) equivalent transfer function



(a)



(b)



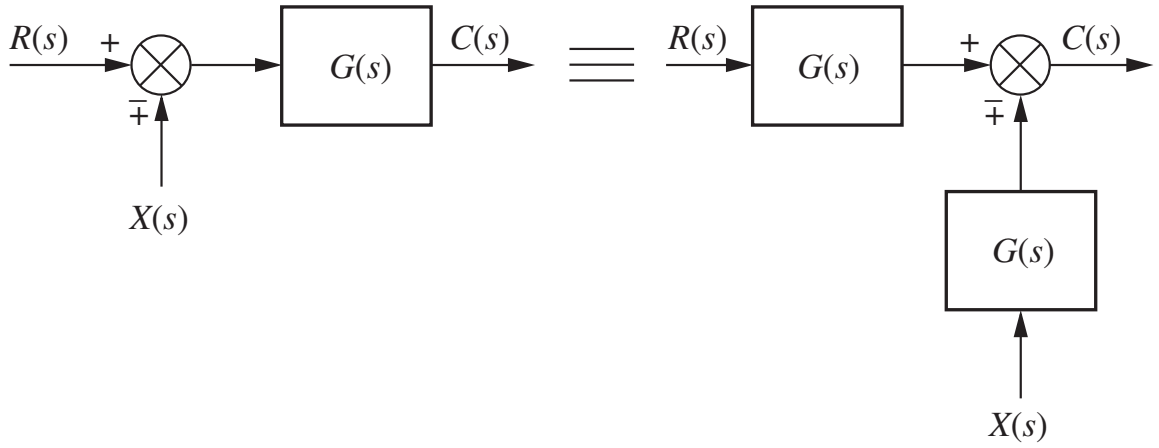
(c)

$$\frac{G_2 G_3}{1 + G_2 G_3 H_2 H_1} = \frac{C}{R}$$

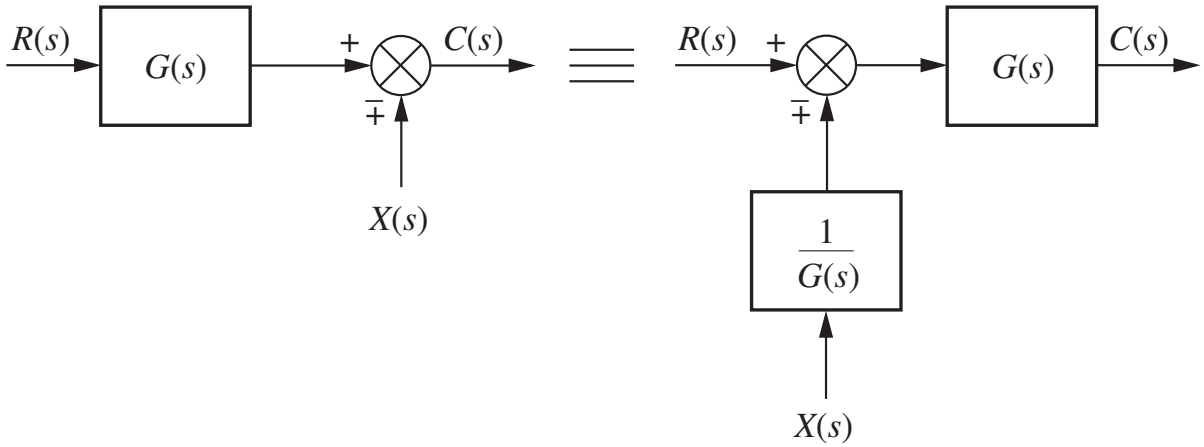
(a) Feedback control system

(b) Simplified model

(c) Equivalent transfer function



(*a*)



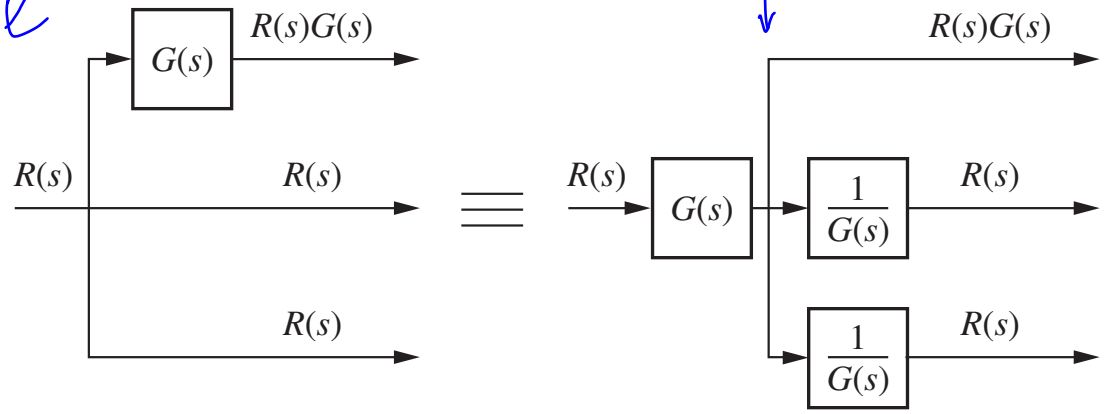
(*b*)

Block diagram algebra for summing junctions – equivalent forms for moving a block.

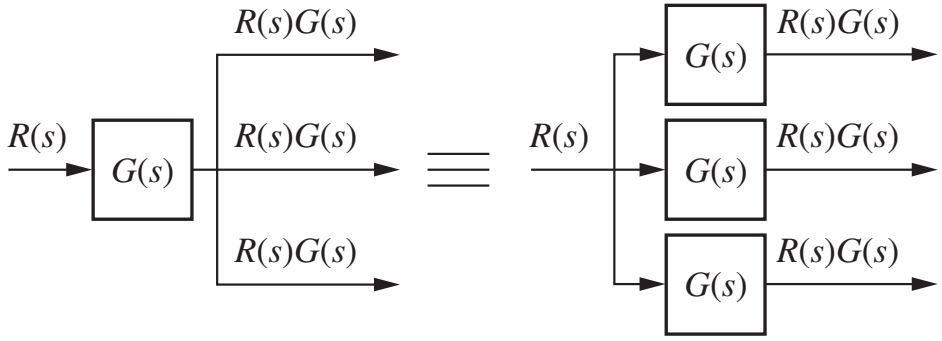
(a) To the left past a summing junction

(b) To the right past a summing junction

moving this block essentially inverts where there are/aren't blocks around that pickoff point



(a)



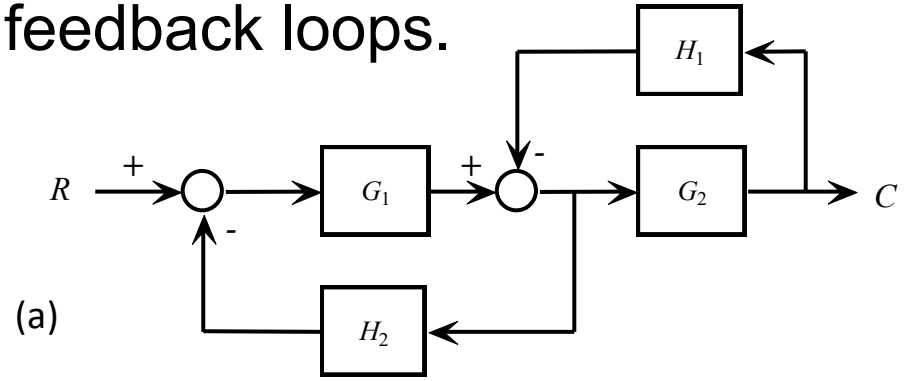
(b)

Block diagram algebra for pickoff points – equivalent forms for moving a block.

(a) To the left past a pickoff point

(b) To the right past a pickoff point

Example 3.7: Cross-coupled feedback loops.



The two feedback loops interfere with each other. The following diagrams (b) and (c) are equivalent to (a):