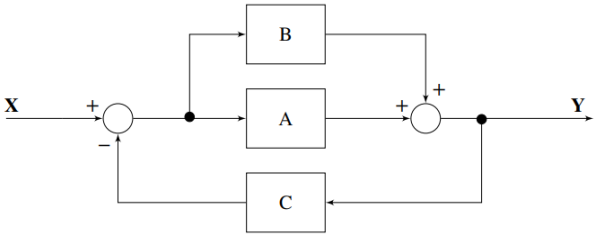
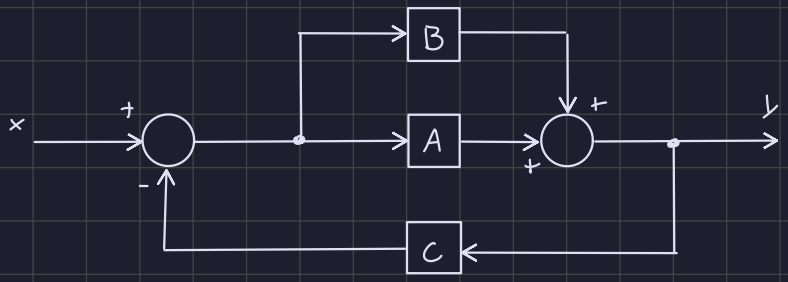
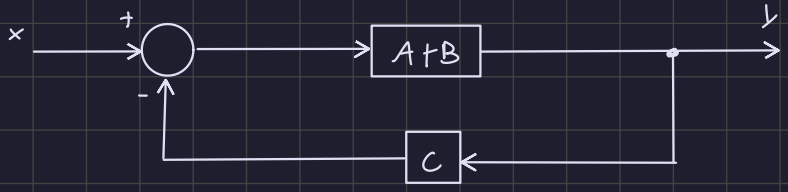
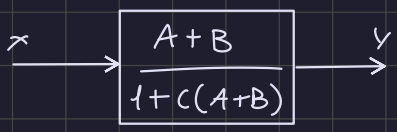
Diagrammi a blocchi

1. Trovare la funzione di trasferimento del seguente schema a blocchi

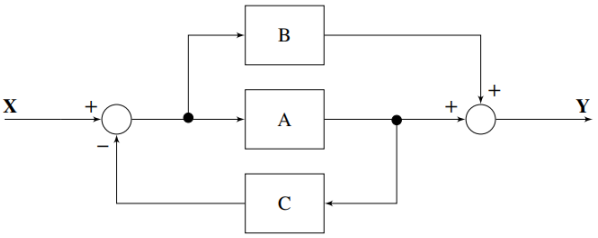


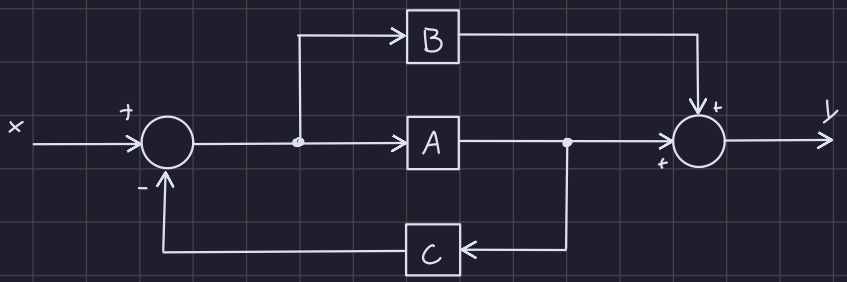


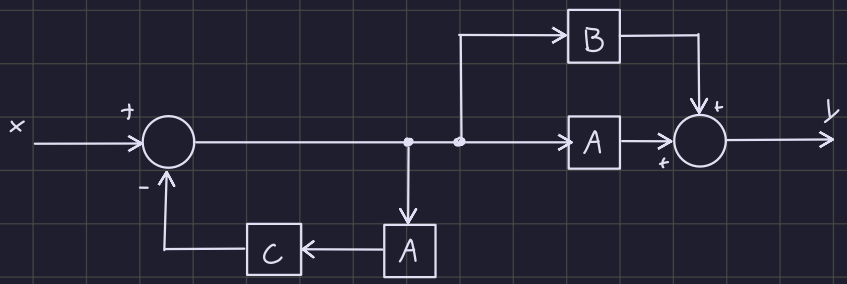


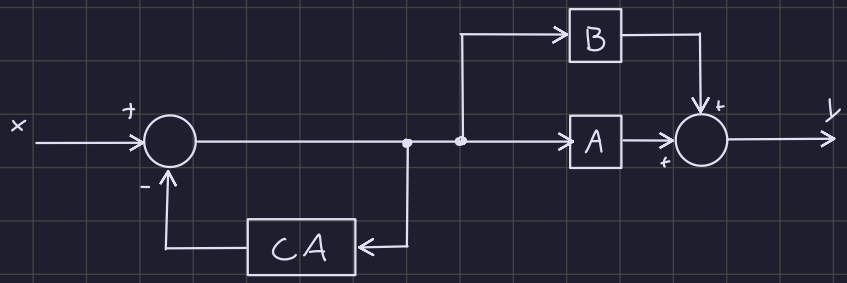


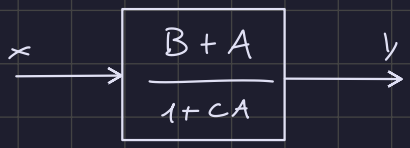
2. Trovare la funzione di trasferimento del seguente schema a blocchi



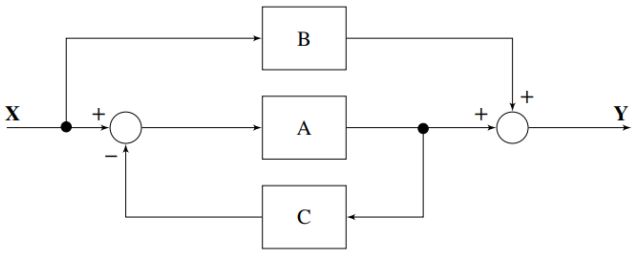


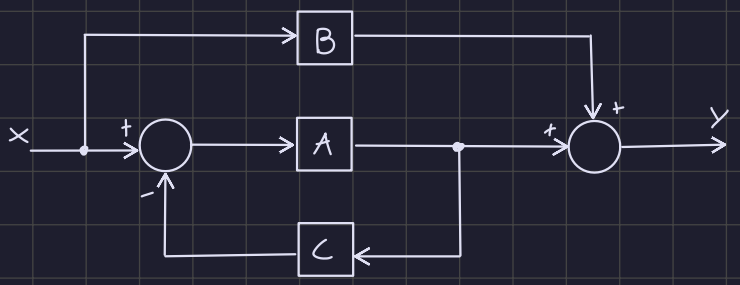


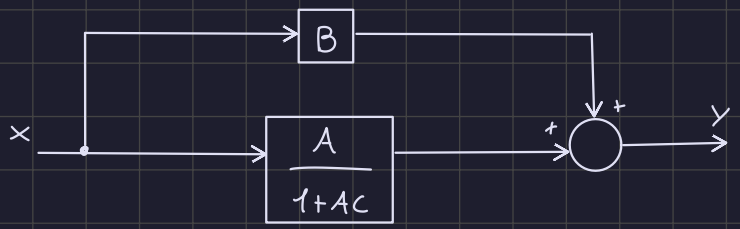




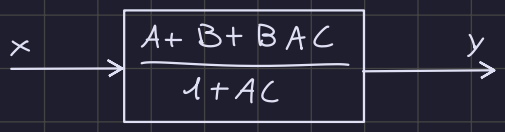
3. Trovare la funzione di trasferimento del seguente schema a blocchi



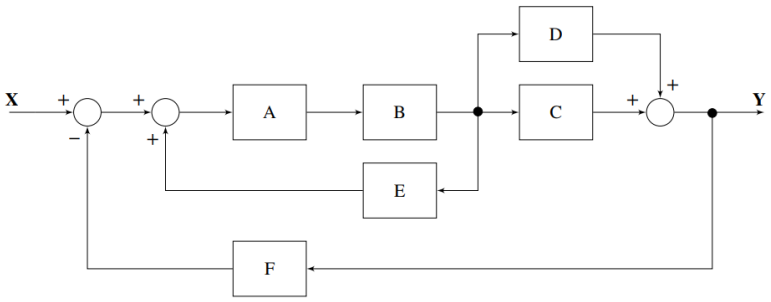


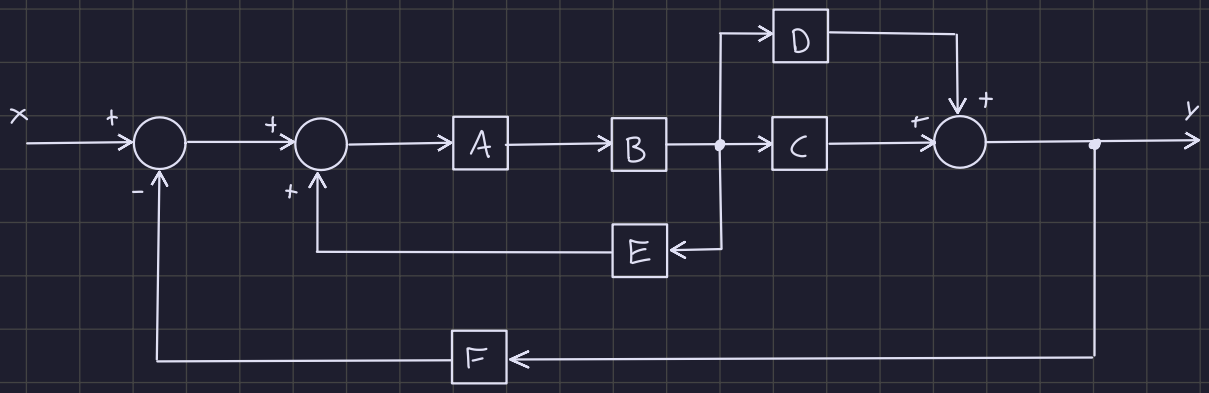


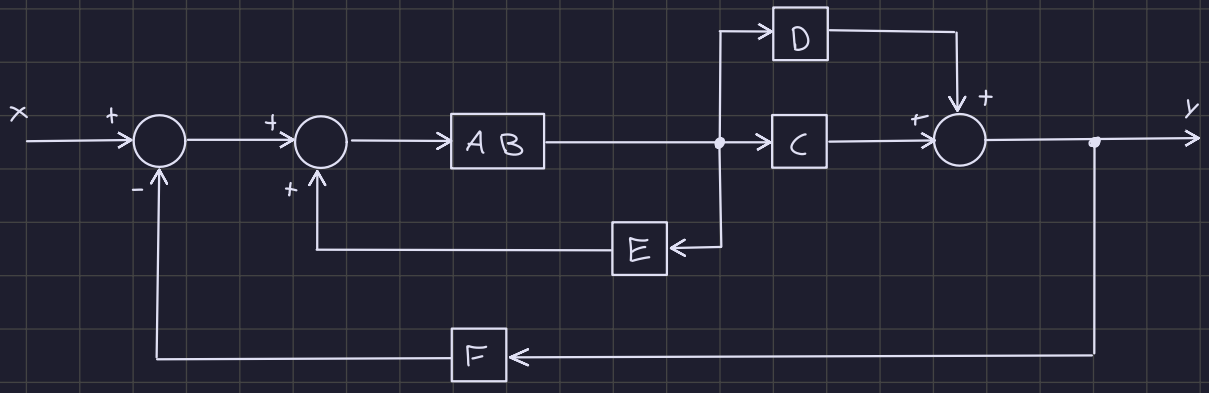
$$\frac{A}{1+AC} + B = \frac{A+B(1+AC)}{1+AC} = \frac{A+B+BAC}{1+AC}$$

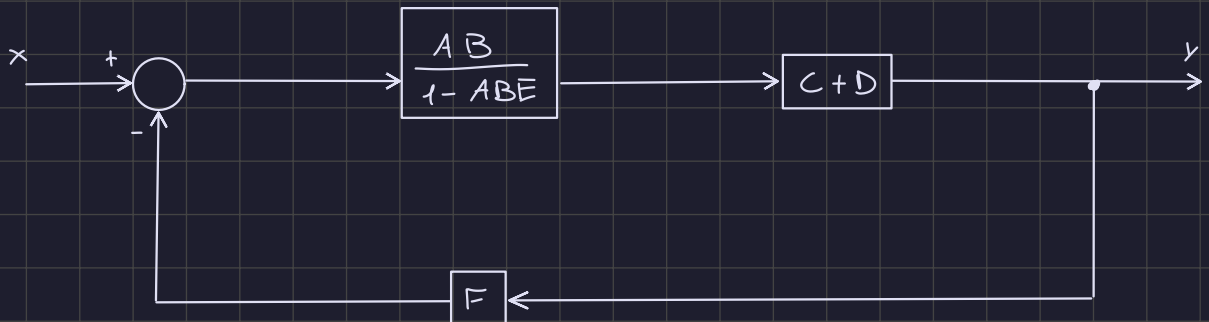


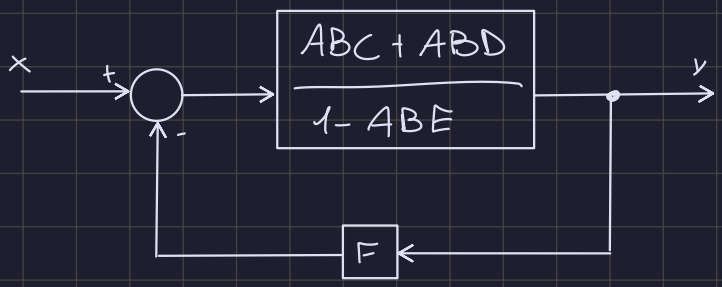
4. Trovare la funzione di trasferimento del seguente schema a blocchi



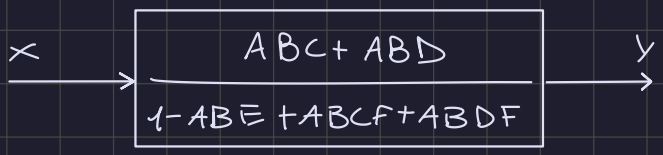




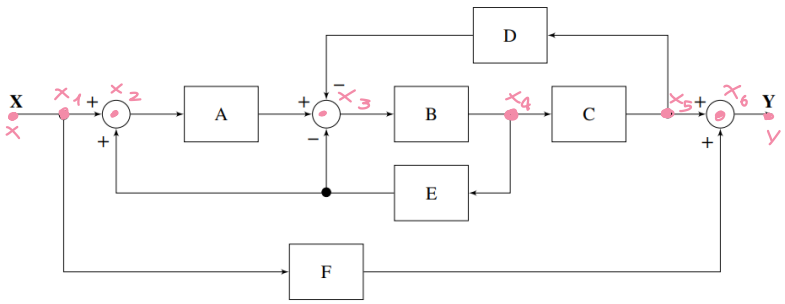


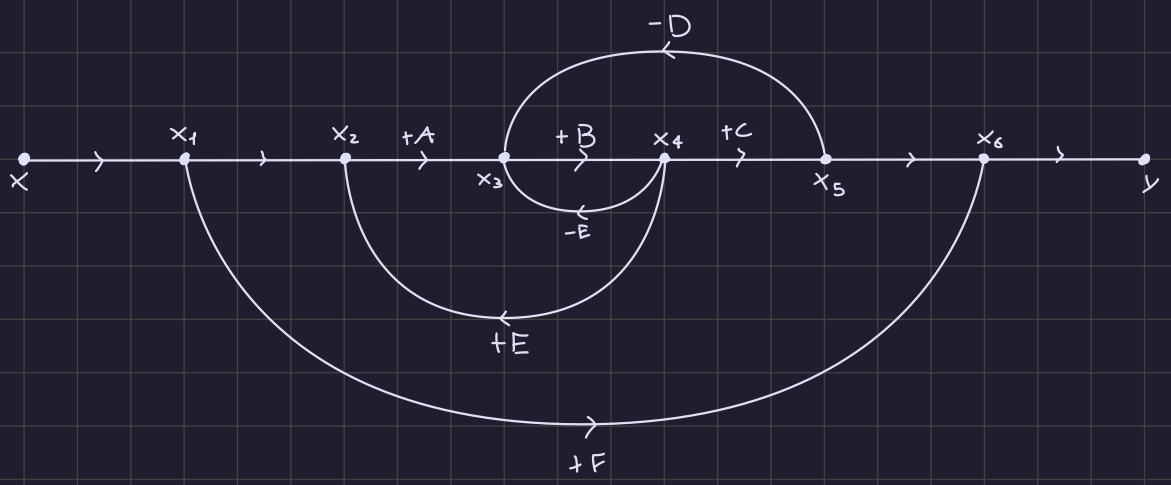


$$\frac{\frac{ABC+ABD}{1-ABE}}{1+\frac{ABCF+ABDF}{1-ABE}} = \frac{\frac{ABC+ABD}{1-ABE}}{\frac{1-ABE+ABCF+ABDF}{1-ABE}} = \frac{ABC+ABD}{1-ABE+ABCF+ABDF}$$



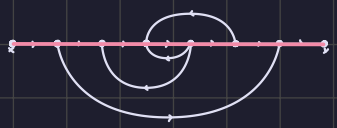
5. Trovare la funzione di trasferimento del seguente schema a blocchi





Troviamo tutti i percorsi diretti:

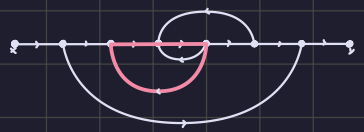
$P_1 = ABC$



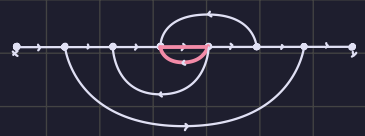
$P_2 = F$

Troviamo tutti gli anelli

$A_1 = ABE$



$A_2 = -EB$



$A_3 = -BCD$

Non ci sono anelli di classe 2, perchè tutti gli anelli di classe 1 hanno almeno 1 nodo in comune

$$\Delta = 1 + \sum_{k=1}^{n} \sum_{j=1}^{h_k} (-1)^k A_j^k$$

h_k = numero di anelli nella classe

Somma di archi di classe k

$$\Delta = 1 - ABE + EB + BCD$$

Determinante per ogni percorso

$$\Delta_1 = 1 - \cancel{ABE} + \cancel{EB} + \cancel{BCD} = 1$$

$$\Delta_2 = 1 - ABE + EB + BCD$$

Troviamo la funzione di trasferimento con la formula di Mason

$$G = \frac{\sum_{i}^{m} P_i \Delta_i}{\Delta}$$

$$G = \frac{ABC + F(1 - ABE + EB + BCD)}{1 - ABE + EB + BCD} = \frac{ABC + F - ABEF + EBF + BCDF}{1 - ABE + EB + BCD}$$