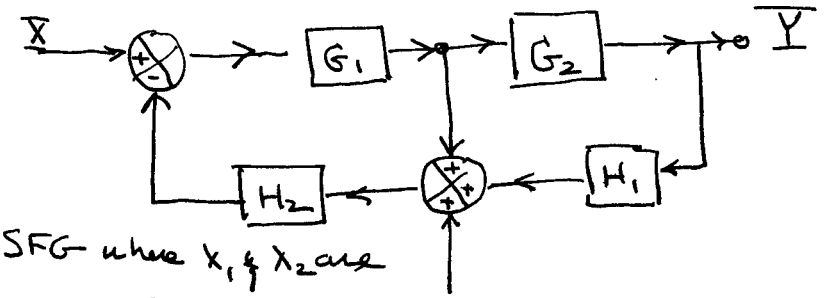
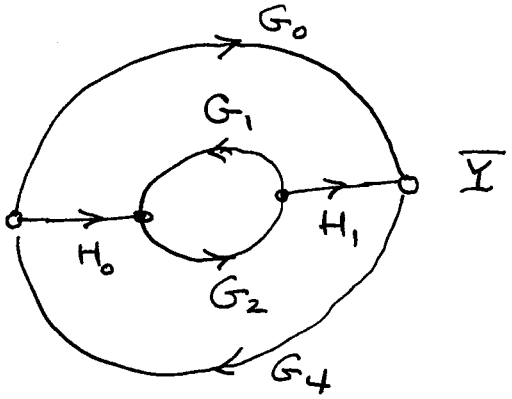
1° Consider 

(a) Draw the SFG where X_1 & X_2 are inputs

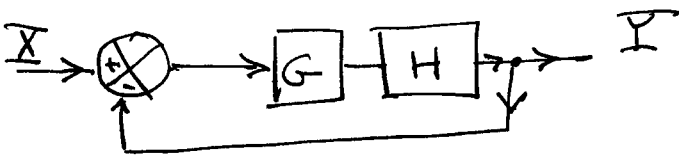
(b) If $X_2=0$ find Y/X_1 ~~$X_2=0$~~

(c) If $X_1=0$ find Y/X_2

(d) Determine Y given X_1 & X_2

2° Consider the SFG → 

Find Y/X

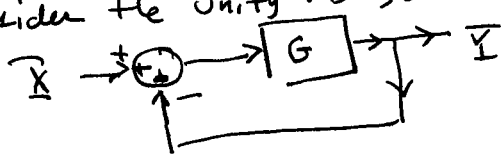
3° Consider the system 

(a) Find Y/X

(b) ~~Find~~ Find the characteristic equation of the system

(c) If $G(s) = \frac{1}{(s+1)(s+3)}$ and $H = \frac{k_p(s+2)}{s^2}$

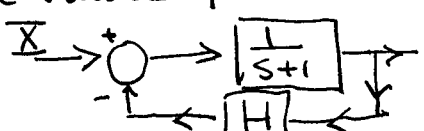
Determine the values of k_p that yield a stable system

4° Consider the unity FB system 

where $G = \frac{k(s+1)}{s(s+5)(s+4)(s+3)}$

(a) Determine charegs

(b) Determine the values of k yielding a stable solution

5° Given the system 

where $E(t) = X - YH$

(a) Find E/X

(b) Given ~~$E(t)=x$~~ $E(s) = X - HY$ find $H(s)$ such that ~~$e(\infty)=0$~~ $e(\infty) = 1/20$ for $x(t) = u(t)$

(c) Show your solution is stable