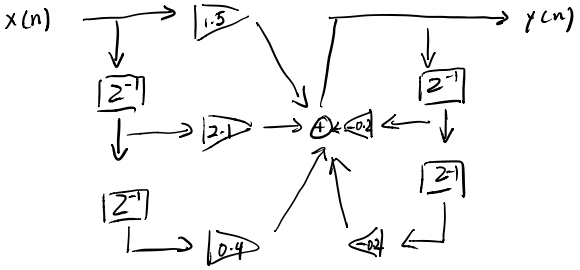
20180801O6

1. $H(z)=\frac{3+4.2z^{-1}+0.8z^{-2}}{2+0.6z^{-1}-0.4z^{-2}}$

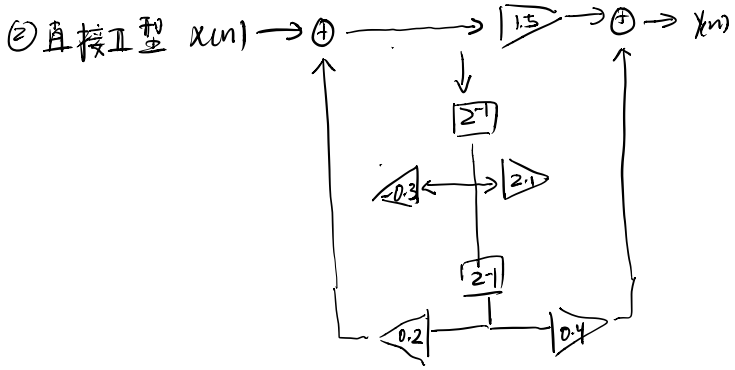
差分方程

$y(n)=1.5x(n)+2.1x(n-1)+0.4x(n-2)-0.3y(n-1)+0.2y(n-2)$

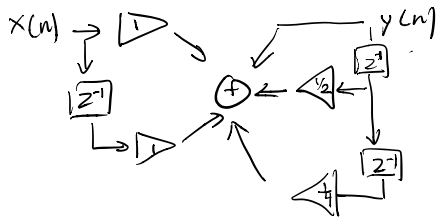
① 直接I型



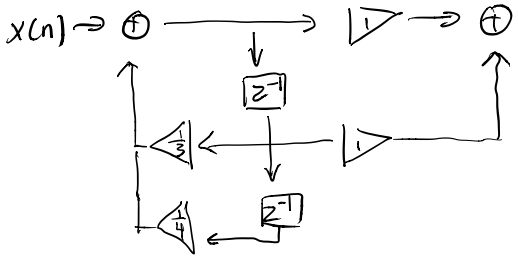
② 直接II型



2(a)



(b)



(c) $H(w)=\frac{He^{-jw}}{1-\frac{1}{3}e^{-jw}-\frac{1}{4}e^{-2jw}}=\frac{(1+\cos w)+j(1-\sin w)}{1-\frac{1}{3}\cos w-\frac{1}{4}\cos 2w+j(\frac{1}{3}\sin w+\frac{1}{4}\sin w)}$

$|H(w)|=\sqrt{\frac{2+2\cos w}{\frac{169}{144}-\frac{1}{2}(\cos w+\cos 2w)}}$

$\theta=\arctan\left(\frac{ad+bc}{ac-bd}\right)$

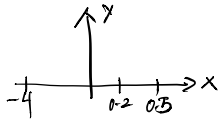
$=\arctan\left(-\frac{19\angle w+3\angle 2w}{8+5\cos w-3\cos 2w}\right)$

3. (a) $H(z)=\frac{1+4z^{-1}}{1-0.7z^{-1}+0.12z^{-2}}$

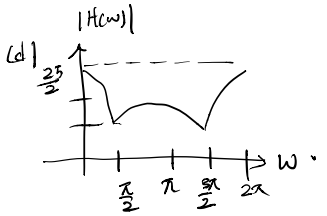
(b) $H(z)=-\frac{14}{1-0.2z^{-1}}+\frac{15}{1-0.3z^{-1}}$

$h(n)=-14\cdot(0.2)^n u(n)+15(0.3)^n u(n)$

(c) 零点 -4 极点 0.2, 0.3



(d) $|H(w)|$



系统低通

(e) 极点 0.2, 0.5

ROC为 $\{z||z|>0.5$ 区域