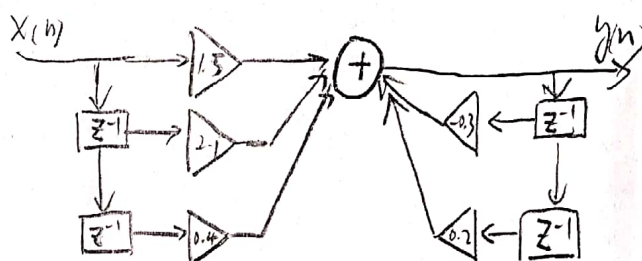




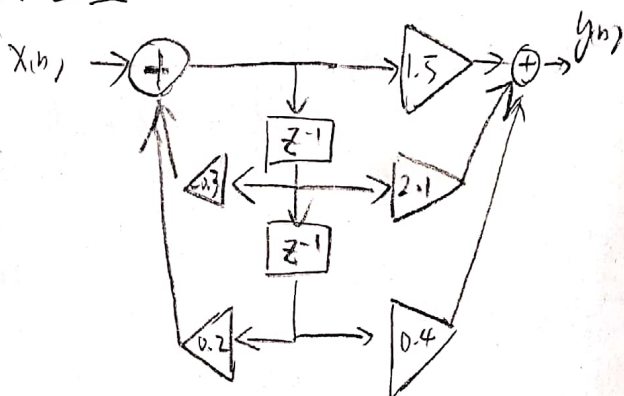
t1. 解: $2y(n) + 0.6y(n-1) - 0.4y(n-2)$
 $= 3x(n) + 4.2x(n-1) + 0.8x(n-2)$

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

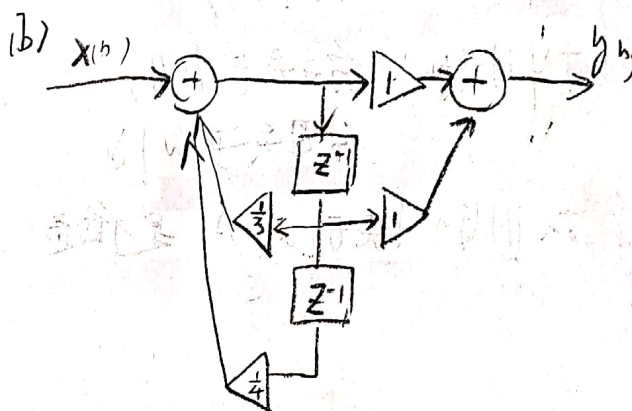
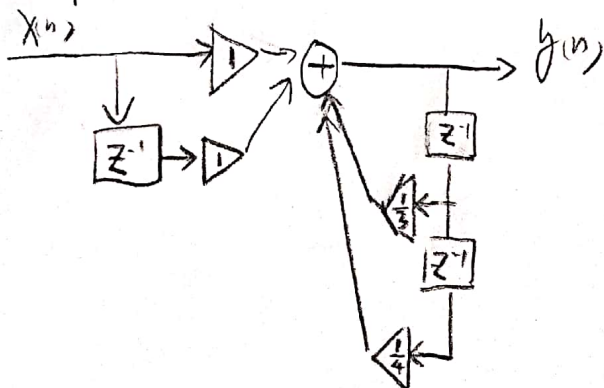
直接I型:



直接II型:



t2. 解: (a)



(b) $H(j\omega) = \frac{1 + e^{-j\omega}}{1 - \frac{1}{3}e^{-j\omega} - \frac{1}{4}e^{-2j\omega}}$

幅度响应为 $|H(j\omega)|$, 相位响应为 $\text{Arg}[H(j\omega)]$

t3. 解: (a) $H(z) = \frac{1 + 4z^{-1}}{1 - 0.7z^{-1} + 0.1z^{-2}}$

(b) 求 $H(z)$ 求逆 z 变换可得 $h(n)$

$H(z) = (1 + 4z^{-1}) \left(\frac{-\frac{2}{3}}{1 - 0.2z^{-1}} + \frac{\frac{5}{3}}{1 - 0.5z^{-1}} \right)$
 $= (1 + 4z^{-1}) W(z)$ 设 $Z[W(n)] = W(z)$

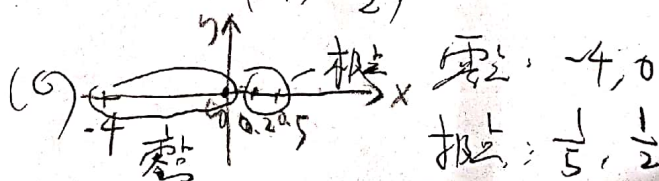
则 $w(n) = -\frac{2}{3} \left(\frac{1}{5} \right)^n u(n) + \frac{5}{3} \left(\frac{1}{2} \right)^n u(n)$

$h(n) = w(n) + 4w(n-1)$

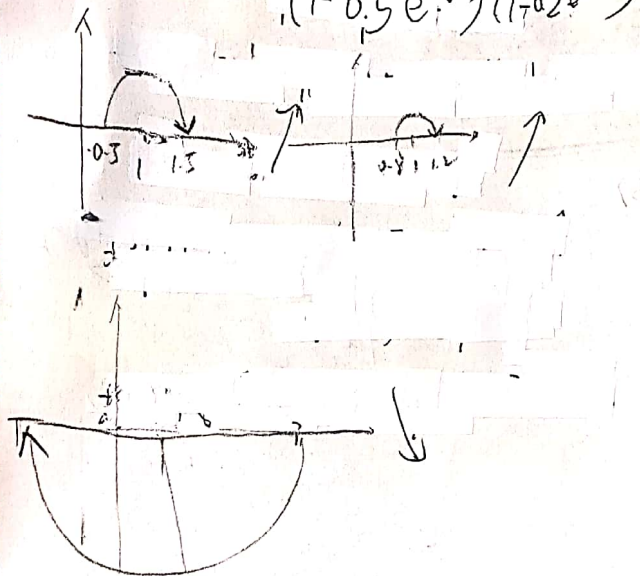
$= -\frac{2}{3} \left(\frac{1}{5} \right)^n u(n) + \frac{5}{3} \left(\frac{1}{2} \right)^n u(n)$

$- \frac{8}{3} \left(\frac{1}{5} \right)^n u(n-1) + \frac{20}{3} \left(\frac{1}{2} \right)^n u(n-1)$

$(|z| > \frac{1}{2})$



$$(f) H(j\omega) = \frac{1+4e^{-j\omega}}{(1-0.5e^{-j\omega})(1-0.2e^{-j\omega})}$$



故 $|H(j\omega)|$ 在 $[0, \pi]$ 上 \downarrow , 是低通

(e) ROC 为 $|z| > \frac{1}{2}$ 包括了单位圆,
故稳定

