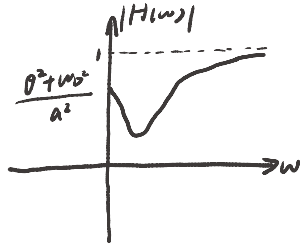
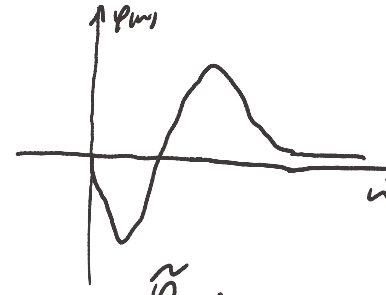
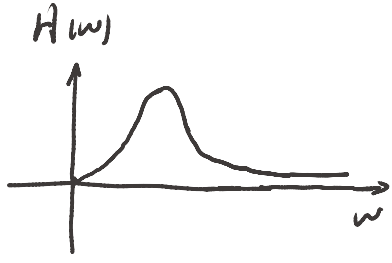
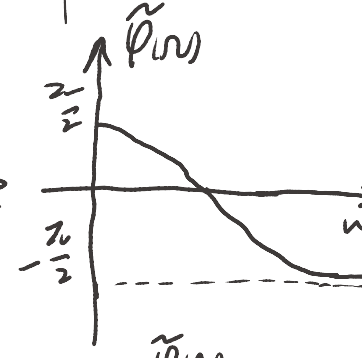
8.26 a)



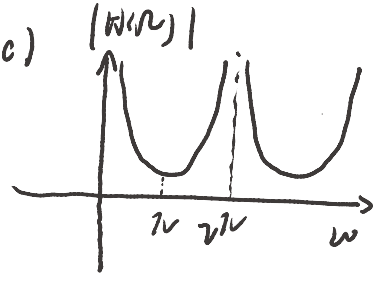


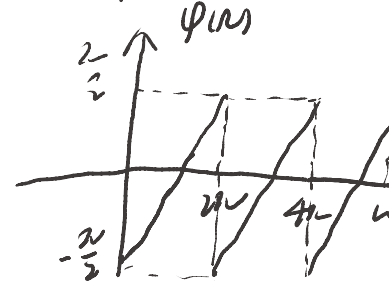
b)



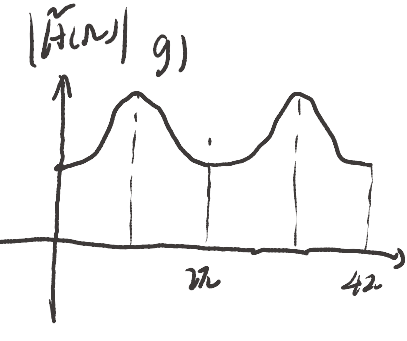


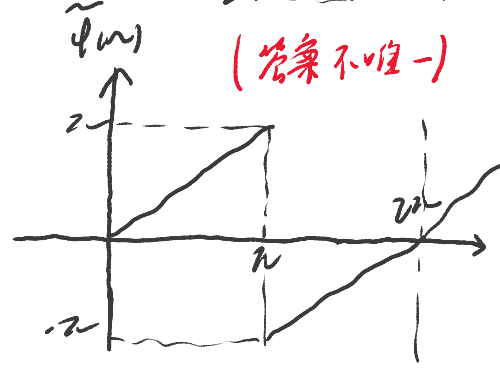
8.27 c)





g)





(答案不唯一)

8.33 1) $H(z)=\dfrac{b+z^{-1}}{1-az^{-1}}$

全通系统的零极点关于单位圆反比镜像对称分布

若 $b=-a$. 则 $H(z)=-a\dfrac{1-a^{*}z^{-1}}{1-az^{-1}}$ 为全通系统

2) $a=0.5$ 时 $H(z)=-0.5\dfrac{1-2z^{-1}}{1-0.5z^{-1}}$

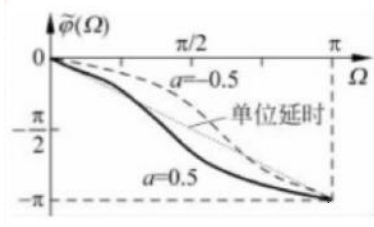
$h[n]=-2\delta[n]+1.5(0.5)^{n}u[n]$

$a=-0.5$ 时 $H(z)=0.5\dfrac{1+2z^{-1}}{1+0.5z^{-1}}$

$h[n]=2\delta[n]-1.5(-0.5)^{n}u[n]$

单位延时 $H(z)=z^{-1}$, $\tilde{\varphi}(\Omega)=-\Omega$

$a=-0.5$ 和 $a=0.5$ 时的频响特性曲线如下图

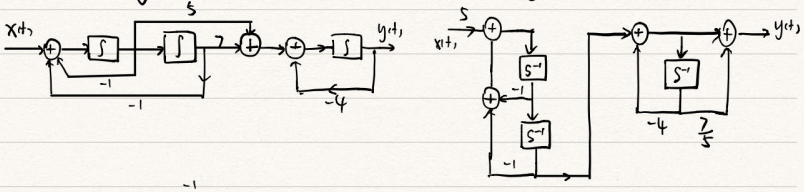


T8.39

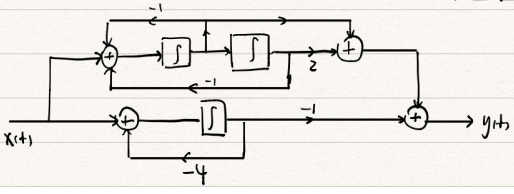
(1) $S(s) = \frac{1}{s} H(s) = \frac{s+2}{s(s^2+s+1)} = \frac{1}{s} - \frac{1}{s+1}$

$s(t) = 1.75\mu(t) + 0.25 e^{-t}\mu(t) - 2 e^{-0.5t} \cos\frac{\sqrt{3}}{2} t\,\mu(t)$

(2) $H(s) = \frac{5s+7}{s^2+s+1} \cdot \frac{1}{s+4} = 5 \cdot \frac{s^{-2}}{1+s^{-1}+s^{-2}} \cdot \frac{1+\frac{7}{5}s^{-1}}{1+4s^{-1}}$

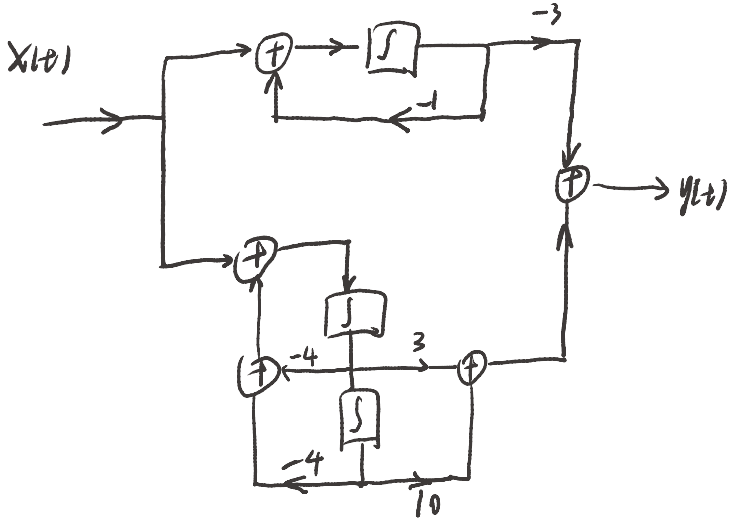


(3)

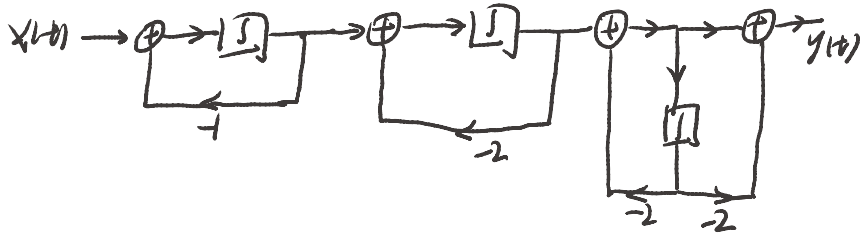


8.40 $H(s) = \frac{s-2}{(s+4)^2(s+1)}$

(1) $H(s) = \frac{3s+10}{s^2+4s+4} - \frac{3}{s+1}$

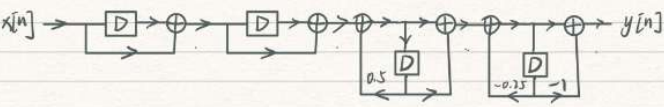


(2) $H(s)=\frac{1}{s+1}\cdot\frac{1}{s+2}\cdot\frac{s-2}{s+2}$



T8.41

(1) $H(z)=\frac{1+2z^{-1}-2z^{-3}-z^{-4}}{1-0.25z^{-1}-0.125z^{-2}}=(1+z^{-1})(1+z^{-1})\cdot\frac{1+z^{-1}}{1-0.5z^{-1}}\cdot\frac{1-z^{-1}}{1+0.25z^{-1}}$ D代表单位时延



(2) $H(z)=64+8z^{-2}-\frac{18}{1-0.5z^{-1}}-\frac{45}{1+0.25z^{-1}}$

$h[n]=64\delta[n]+8\delta[n-2]-18(0.5)^n u[n]-45(-0.25)^n u[n]$