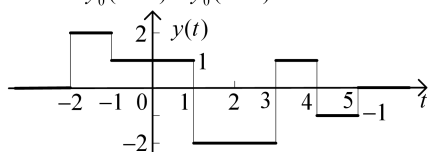
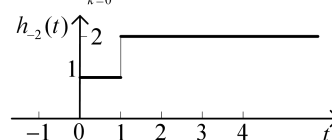


3.22 1) $x(t) = 2p(t+1) + p(t) + 3p(t-1) - p(t-2) + p(t-3)$

2) $y(t) = 2y_0(t+1) + y_0(t) + 3y_0(t-1) - y_0(t-2) + y_0(t-3)$



3) $h_{-2}(t) = \sum_{k=0}^{+\infty} ky_0(t-k)$



4) $s(t) = \frac{d}{dt} h_{-2}(t) = \delta(t) + \delta(t-1)$ $h(t) = \frac{d}{dt} s(t) = \delta'(t) + \delta'(t-1)$

3.27 (1) $h(t) = \frac{1}{2T} [u(t+T) - u(t-T)]$: 线性, 时不变, 非因果, 稳定

(3) $h(t) = e^{-2t-4} u(t+2)$: 线性, 时不变, 非因果, 稳定

3.34 (1) $y(t) = (1.5e^{-3t} - 4e^{-2t} + 2.5e^{-t})u(t)$

(2) $y[n] = 2(\delta[n+1] - \delta[n]) + [0.75(-0.5)^{n-1} - 0.25(0.5)^{n-1}]u[n-1]$

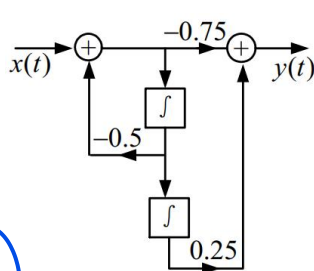
$$= \left(3 \left(-\frac{1}{2} \right)^{n+1} - \left(\frac{1}{2} \right)^{n+1} \right) u[n+1]$$

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

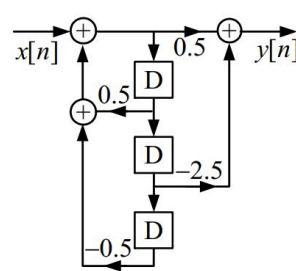
$$= \left(\left(\frac{1}{2} \right)^{n+1} + \left(-\frac{1}{2} \right)^{n+1} \right) u[n+1] - \left(\left(\frac{1}{2} \right)^n + \left(-\frac{1}{2} \right)^n \right) u[n]$$

3.35 (3) $f(t) = u(t) - u(t-1)$

4.18-1



4.18-4



4.16

4.16. (4)

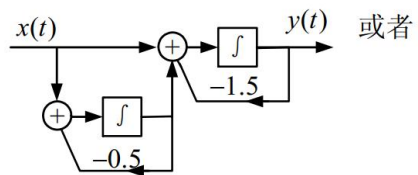
① $x(n) = u(n)$
零输入: $y_{zi}(0) = -1$ $y_{zi}(1) = \frac{13}{4}$ $y_{zi}(2) = \frac{41}{16}$ $y_{zi}(3) = \frac{97}{64}$

零状态: $y_{zs}(0) = 1$ $y_{zs}(1) = \frac{3}{4}$ $y_{zs}(2) = \frac{7}{16}$ $y_{zs}(3) = \frac{15}{64}$

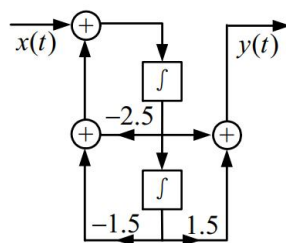
② $x(n) = \frac{1}{2} u(n)$
 $y_{zi}(0) = -1$ $y_{zi}(1) = \frac{15}{4}$ $y_{zi}(2) = \frac{47}{16}$ $y_{zi}(3) = \frac{117}{64}$

$y_{zs}(0) = 1$ $y_{zs}(1) = \frac{1}{4}$ $y_{zs}(2) = -\frac{3}{16}$ $y_{zs}(3) = -\frac{19}{64}$

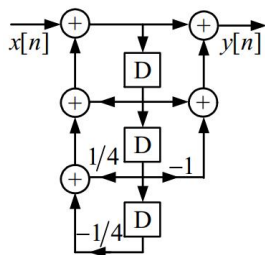
4.19-2



或者



4.19-4



4.20 (e) $x(t) = y''(t) + 3y'(t) + 2y(t)$, $h(t) = e^{-t}u(t) - e^{-2t}u(t)$

(f) $y[n] - 0.5y[n-1] - 0.5y[n-2] = x[n-1]$, $h[n] = \frac{2}{3}[1 - (-0.5)^n]u[n-1]$

?