

5-5 判断以下系统是否是线性，是否是时不变。

(1)  $y[n] = 4x[n] - 2$ ;

(2)  $y[n] = x[n] \sin\left(\frac{3\pi}{7}n + \frac{\pi}{4}\right)$ ;

(3)  $y[n] = \{x[n]\}^3$ ;

(4)  $y[n] = e^{x[n]}$ ;

5-8 求解下列齐次差分方程。

(1)  $y[n] - \frac{1}{2}y[n-1] = 0$ ,  $y[0] = 1$

(2)  $y[n] + 2y[n-1] + y[n-2] = 0$ ,  $y[0] = y[-1] = 1$

5-10 求下列差分方程所描述的 LTI 离散时间系统的零输入响应。

(1)  $y[n] + 3y[n-1] + 2y[n-2] = x[n]$ ,  $y[-1] = 0$ ,  $y[-2] = 1$

(2)  $y[n] + 2y[n-1] + y[n-2] = x[n] - x[n-1]$ ,  $y[-1] = 1$ ,  $y[-2] = -3$