

- 卷积的定义：

$$y[n] = \sum_{k=-\infty}^{+\infty} f[k]x[n-k] \quad (1)$$

- 已知:

$$\begin{aligned} f[n] &= \delta[n-1] \\ x[n] &= g[2n] \end{aligned} \quad (2)$$

- 所以:

$$y[n] = f[n] \star x[n] \quad (3)$$

$$= \sum_{k=-\infty}^{+\infty} f[k]x[n-k] \quad (4)$$

$$= \sum_{k=-\infty}^{+\infty} \delta[k-1]g[2n-2k] \quad (5)$$

$$k' = k-1, k = k' + 1 \quad (6)$$

$$k \in (-\infty, +\infty) \rightarrow k' \in (-\infty, +\infty) \quad (7)$$

$$y[n] = \sum_{k'=-\infty}^{+\infty} \delta[k']g[2n-2(k'+1)] \quad (8)$$

$$= \sum_{k'=-\infty}^{+\infty} \delta[k']g[2(n-k'-1)] \quad (9)$$

$$n-k' \rightarrow n \quad (10)$$

$$y(n) = g[2(n-1)] \quad (11)$$

故第二种推算才正确.