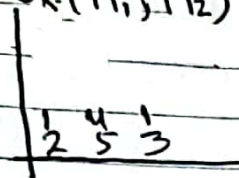


Latihan Soal Convolution

Diberikan:

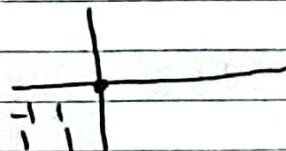
$$\chi(\pi_1, \pi_2)$$


Konvolusikan sinyal tsb :

Convolusikan sinyal tsb :

$$g(n_1, n_2) = \sum_{k_1=-\infty}^{\infty} \sum_{k_2=-\infty}^{\infty} x(k_1, k_2) h(n_1 - k_1, n_2 - k_2)$$

Langkah pertama, cerminkan $h(n_1, n_2)$ terhadap origin sehingga didapat :



sehingga konduksikan sinyal sebagai berikut.

$$\begin{array}{ccccccc} & 2 & 4 & 1 & & & \\ -1 & (1 \cdot 2) & 5 & 3 & \langle \equiv \rangle & -(10) + (2) & \equiv 2 \\ 1 & 1 & & & & & \end{array}$$

$$\begin{array}{r} 1 \quad u \quad 1 \\ (-1.3) \cdot (15)^3 \leq (-1)(7) + 5 \equiv 3 \\ 1 \quad 1 \end{array}$$

$$\begin{array}{r} 1481 \\ 2(-1.5)(1.3) \quad (\equiv) -5+3 \equiv -2 \end{array}$$

$$\begin{array}{r} 141 \\ 25 \overline{) 1.3} \end{array} \quad | \quad (E) -3 + 1(0) = -3$$

~~$$\begin{array}{ccccccc} 1 & 1 & & & & & \\ 1 & 1 & 1 & 1 & 1 & 1 & 1 \\ 2 & & & 3 & & & \end{array}$$~~

~~$$\begin{array}{ccc} -1 & 1 & \\ 1 & (1.4) & (1.1) \end{array} \quad (\equiv) \quad 4+1 \equiv 5$$

$$\begin{array}{cc} 2 & 5 \end{array} \quad 3$$~~

$$\begin{array}{l} \cdot \begin{array}{ccc} -1 & 1 & \\ 1 & (1.1) & 4 \end{array} \quad (\equiv) \quad 1(1.1) + 1(1.2) \equiv 3 \\ \quad \begin{array}{cc} 1 & (1.2) \end{array} \quad 5 \quad 3 \\ \\ \cdot \begin{array}{ccc} (-1.1) & (1.4) & 1 \end{array} \quad (\equiv) \quad -1 + 4 + 2 + 5 \equiv 10 \\ \quad \begin{array}{cc} (1.2) & (1.5) \end{array} \quad 3 \\ \\ \cdot \begin{array}{ccc} 1 & (1.4) & (1.1) \end{array} \quad (\equiv) \quad -1 + 4 + 2 + 5 \equiv 10 \\ \quad \begin{array}{cc} 2 & (1.5) \end{array} \quad (1.3) \\ \\ \cdot \begin{array}{ccc} 1 & (1.4) & (1.1) \end{array} \quad (\equiv) \quad -4 + 1 + 5 + 3 \equiv 5 \\ \quad \begin{array}{cc} 2 & (1.5) \end{array} \quad (1.3) \\ \\ \cdot \begin{array}{ccc} 1 & 4 & (-1.1) \end{array} \quad (\equiv) \quad -1 + 3 + 0 + 0 \equiv 2 \\ \quad \begin{array}{cc} 2 & 5 \end{array} \quad (1.3) \quad 1 \end{array}$$

$$\begin{array}{l} \cdot \begin{array}{ccc} -1 & 1 & \\ 1 & (1.1) & 4 \end{array} \quad (\equiv) \quad 1 \\ \quad \begin{array}{cc} 2 & 3 \end{array} \\ \\ \cdot \begin{array}{ccc} -1 & 1 & \\ (1.1) & (4.1) & 1 \end{array} \quad (\equiv) \quad 1+4 \equiv 5 \\ \quad \begin{array}{cc} 2 & 5 \end{array} \quad 3 \\ \\ \cdot \begin{array}{ccc} -1 & 1 & \\ 1 & (1.4) & (1.1) \end{array} \quad (\equiv) \quad 4+1 \equiv 5 \\ \quad \begin{array}{cc} 2 & 5 \end{array} \quad 3 \\ \\ \cdot \begin{array}{ccc} -1 & 1 & \\ 1 & 4 & (1.4) \end{array} \quad (\equiv) \quad 4 \\ \quad \begin{array}{cc} 2 & 5 \end{array} \quad 3 \end{array}$$

Hasil akhir :

$$g(M_1, M_2) = \begin{array}{cc|cc} & & 1 & 5 & 5 & 4 \\ & & 3 & 10 & 5 & 2 \\ & & 2 & 3 & -2 & -3 \end{array}$$