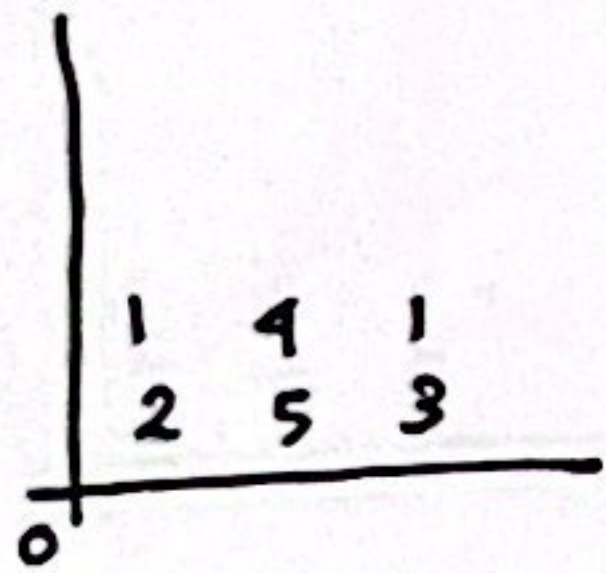


NADYA P. ARISNI

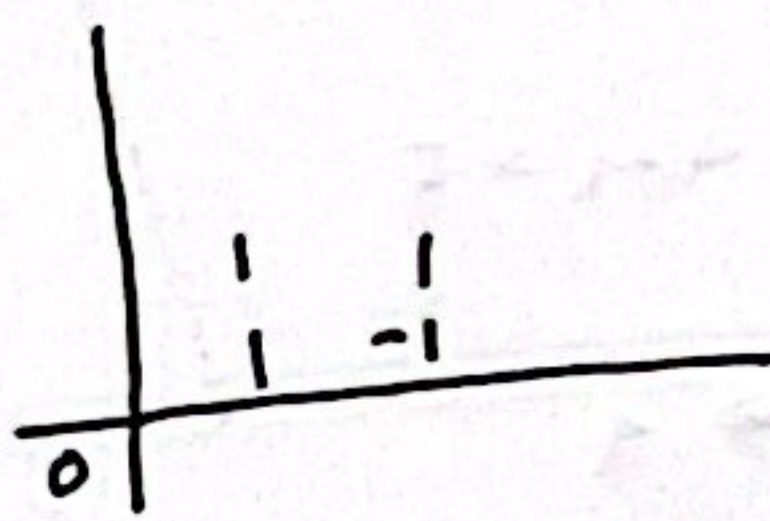
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→ konvolusi 2D

$x(m,n)$



$h(m,n)$

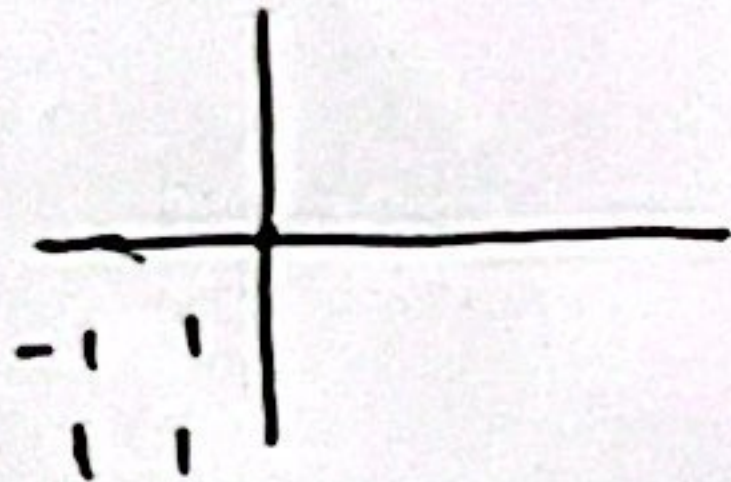


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→ konvolusikan sinyal di atas

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

→ Diterminkan



Sehingga konvolusikan sinyal sebagai berikut

$$\begin{aligned} &\rightarrow \begin{array}{ccc} & 1 & 4 & 1 \\ -1 & (1.2) & 5 & 3 \end{array} \Leftrightarrow -1(0) + (2) = 2 \\ &\quad \begin{array}{ccc} & 1 & & \\ (-1.3) & (1.5) & 3 & \end{array} \Leftrightarrow -1(2) + 5 = 3 \\ &\quad \begin{array}{ccc} 1 & 4 & 1 \\ 2 & (1.5) & (1.3) \end{array} \Leftrightarrow -5 + 3 = -2 \\ &\rightarrow \begin{array}{ccc} 1 & 4 & 1 \\ 2 & 5 & (-1.3) & 1 \end{array} \Leftrightarrow -3 + 1(0) = -3 \end{aligned}$$

Hasil

$$\begin{pmatrix} 2 \\ 3 \\ -2 \\ -3 \end{pmatrix}$$

$$\begin{aligned} &\rightarrow \begin{array}{ccc} & 1 & 4 & 1 \\ 1 & (1.2) & 5 & 3 \end{array} \Leftrightarrow 1(1) + 1(2) = 3 \\ &\rightarrow \begin{array}{ccc} (-1.1) & (1.4) & 1 \\ (1.2) & (1.5) & 3 \end{array} \Leftrightarrow -1 + 4 + 2 + 5 = 10 \\ &\rightarrow \begin{array}{ccc} 1 & (-1.4) & (1.0) \\ 2 & (1.5) & (1.3) \end{array} \Leftrightarrow -4 + 1 + 5 + 3 = 5 \\ &\rightarrow \begin{array}{ccc} 1 & 4 & (-1.1) & 1 \\ 2 & 5 & (1.3) & 1 \end{array} \Leftrightarrow -1 + 3 + \infty + \infty = 2 \end{aligned}$$

Hasil

$$\begin{pmatrix} 3 \\ 10 \\ 5 \\ 2 \end{pmatrix}$$



$$\begin{array}{l}
 \hookrightarrow \begin{array}{cccc} -1 & 1 & & \\ 1 & (1-1) & 4 & 1 \\ & 2 & 3 & \end{array} \Leftrightarrow 1 \\
 \hookrightarrow \begin{array}{cccc} -1 & 1 & & \\ (1-1) & (4-1) & 1 & \\ & 2 & 5 & 3 \end{array} \Leftrightarrow 1+4=5 \\
 \hookrightarrow \begin{array}{cccc} & -1 & 1 & \\ 1 & (1-4) & (1-1) & \\ & 2 & 5 & 3 \end{array} \Leftrightarrow 4+1=5 \\
 \hookrightarrow \begin{array}{cccc} & & -1 & 1 \\ 1 & 4 & (1-1) & 1 \\ & 2 & 5 & 3 \end{array} \Leftrightarrow 1
 \end{array}$$

Hasil

$$\begin{pmatrix} 1 \\ 5 \\ 5 \\ 1 \end{pmatrix}$$

→ Hasil akhir

$$g(m,n) = \begin{array}{c|cccc} & 1 & 5 & 5 & 11 \\ & 3 & 10 & 5 & 2 \\ & 2 & 3 & -2 & -3 \end{array}$$