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Latihan Soal

$x(n_1, n_2)$

1	4	1
2	5	3

→ dikonvulusikan dengan

$h(n_1, n_2)$

1	1
1	-1

Hasil konvulusinya :

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

STEP 1

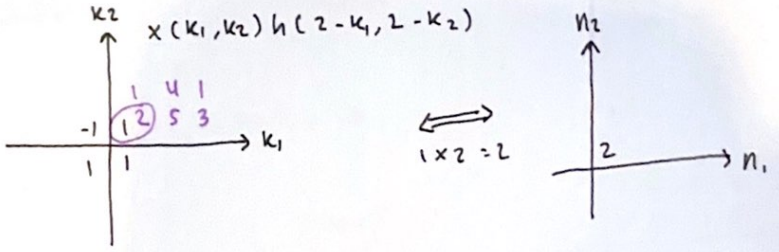
a) melakukan pencerminan $h(n_1, n_2)$ terhadap origin $(0,0)$ sehingga didapatkan

-1	1
1	1

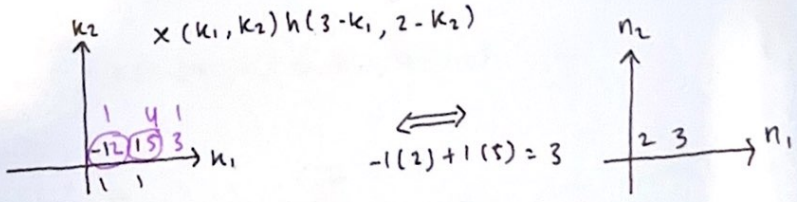
STEP 2

a) konvulusikan

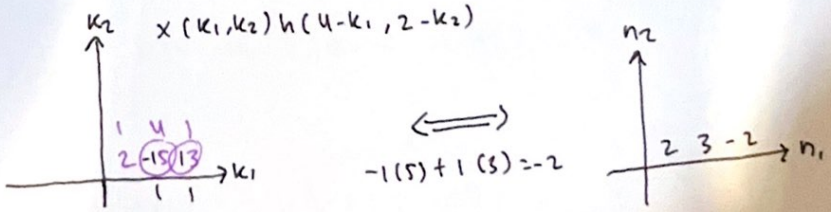
1) $x(k_1, k_2)\, h(2 - k_1, 2 - k_2)$



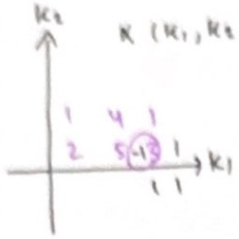
2) $x(k_1, k_2)\, h(3 - k_1, 2 - k_2)$



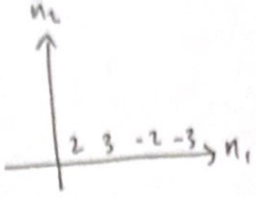
3) $x(k_1, k_2)\, h(4 - k_1, 2 - k_2)$



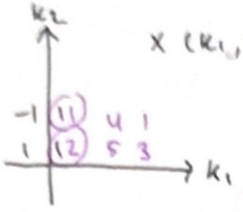
4) $x(k_1,k_2)\,h(5-k_1,\,2-k_2)$



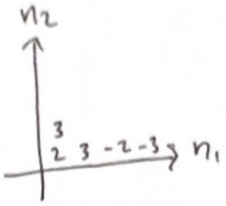
$\Longleftrightarrow$ $-1(3) = -3$



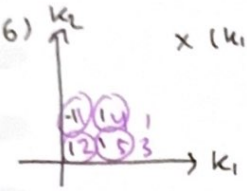
5) $x(k_1,k_2)\,h(2-k_1,\,3-k_2)$



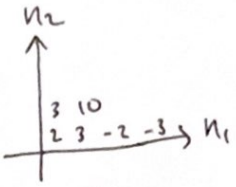
$\Longleftrightarrow$ $1(1) + 1(2) = 3$



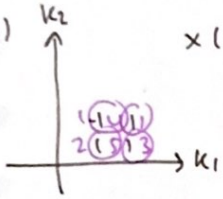
6) $x(k_1,k_2)\,h(3-k_1,\,3-k_2)$



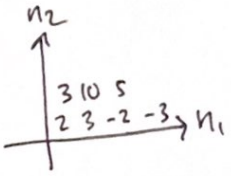
$\Longleftrightarrow$ $-1(1) + 1(4) + 1(2) + 1(5) = 10$



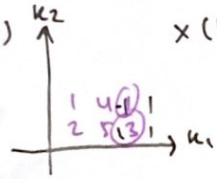
7) $x(k_1,k_2)\,h(4-k_1,\,3-k_2)$



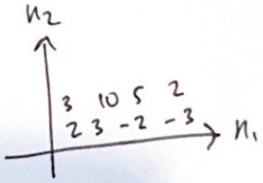
$\Longleftrightarrow$ $-1(4) + 1(1) + 1(5) + 1(3) = 5$



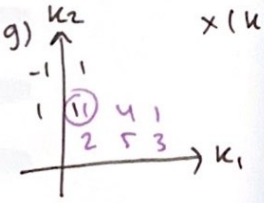
8) $x(k_1,k_2)\,h(5-k_1,\,3-k_2)$



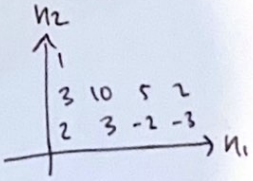
$\Longleftrightarrow$ $-1(1) + 1(3) = 2$



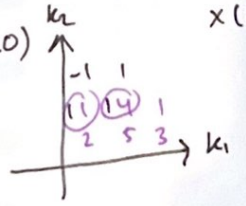
9) $x(k_1,k_2)\,h(2-k_1,\,4-k_2)$



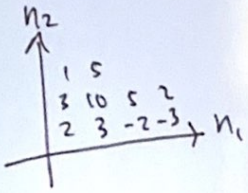
$\Longleftrightarrow$ $1(1) = 1$



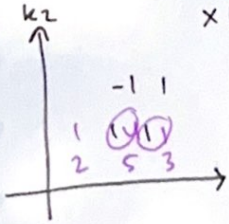
10) $x(k_1,k_2)\,h(3-k_1,\,4-k_2)$



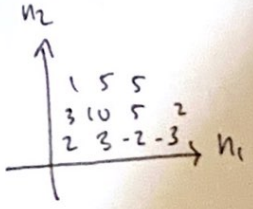
$\Longleftrightarrow$ $1(1) + 1(4) = 5$



11) $x(k_1,k_2)\,h(4-k_1,\,4-k_2)$

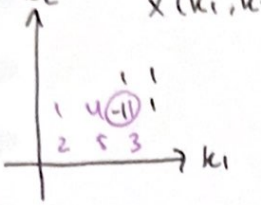


$\Longleftrightarrow$ $1(4) + 1(1) = 5$



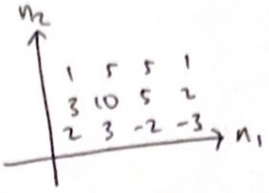
(2) k_2

$x(k_1,k_2)\,h(5-k_1,\,4-k_2)$



$\Longleftrightarrow$

$(-1)^1 = -1$



The result is ;

$g(n_1,n_2) =$