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$3^a \, 3^c = 3^{2b}$

$a + c = 2b$

$\downarrow \quad \downarrow$

$0 \quad 0$

$7^{10} - \left[ {}^7C_1 6^{10} - {}^7C_2 5^{10} + \cdots \right]$

${}^{51}C_2 \; - \; - \; - \; \cdots \; -$

$+ \; {}^{50}C_2$

$3A, 1D \rightarrow {}^6C_1 \, {}^5C_1$ E E

$2A, 20A \rightarrow {}^6C_2$

$2A, 2D \rightarrow {}^6C_1 \, {}^5C_2$

1 1 1 1 1 1 4 $\rightarrow {}^7C_1 \dfrac{10!}{4!}$

1 1 1 1 1 2 3 $\rightarrow {}^7C_1 \, {}^6C_1 \dfrac{10!}{2! \, 3!}$

1 1 1 1 2 2 2 $\rightarrow {}^7C_3 \dfrac{10!}{2! \, 2! \, 2!}$

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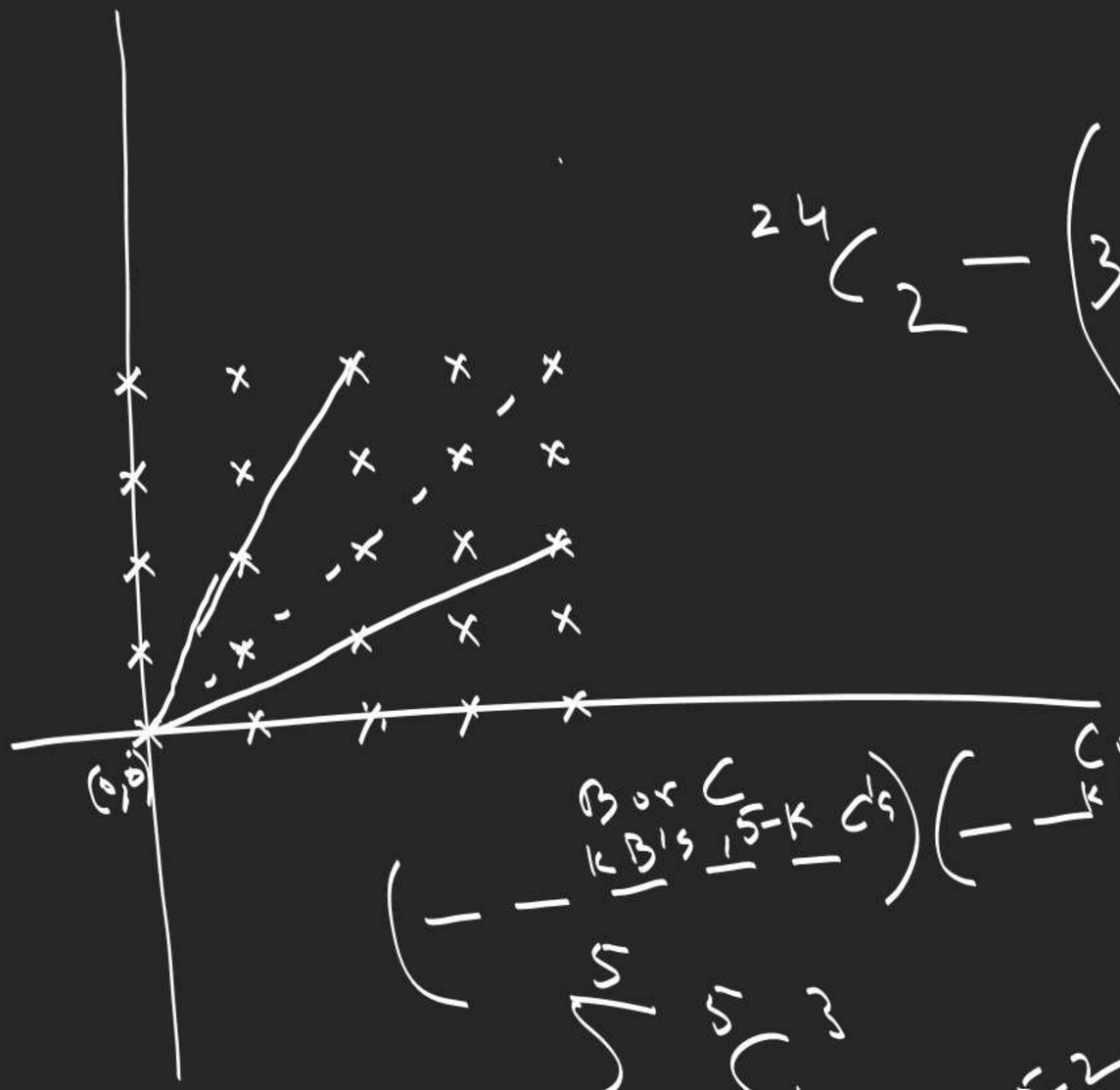


$$^{24}C_2 - \left(3 \times {}^{4}C_2 + 2\right)$$

B or C

k B's, 5-k C's

C or A

k C's → 5-k A's

A or B

k A's, 5-k B's

$$\sum_{k=0}^{5} {}^{5}C_k^{\,3} \qquad {}^{15-2+3}C_3 - {}^{15-(6+2)+3}C_3$$

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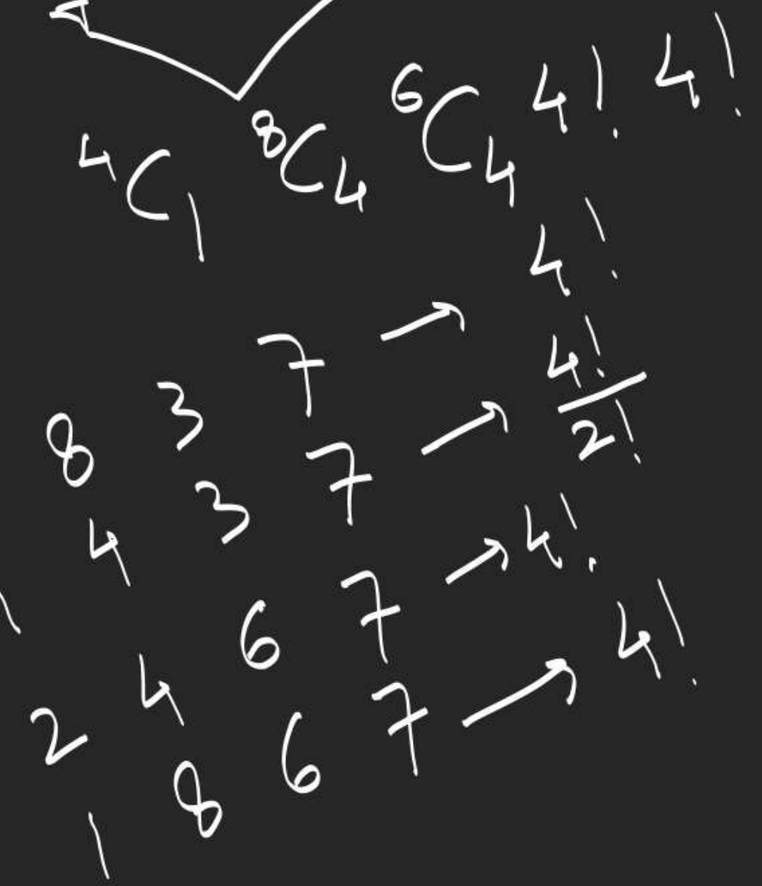
$$\frac{24!}{3!\,3!\,(2!)^5}$$

$${}^8C_1\,\frac{23!}{(3!)^2\,(2!)^5}$$

$${}^4C_1\;{}^8C_4\;{}^6C_4\;4!\;4!$$



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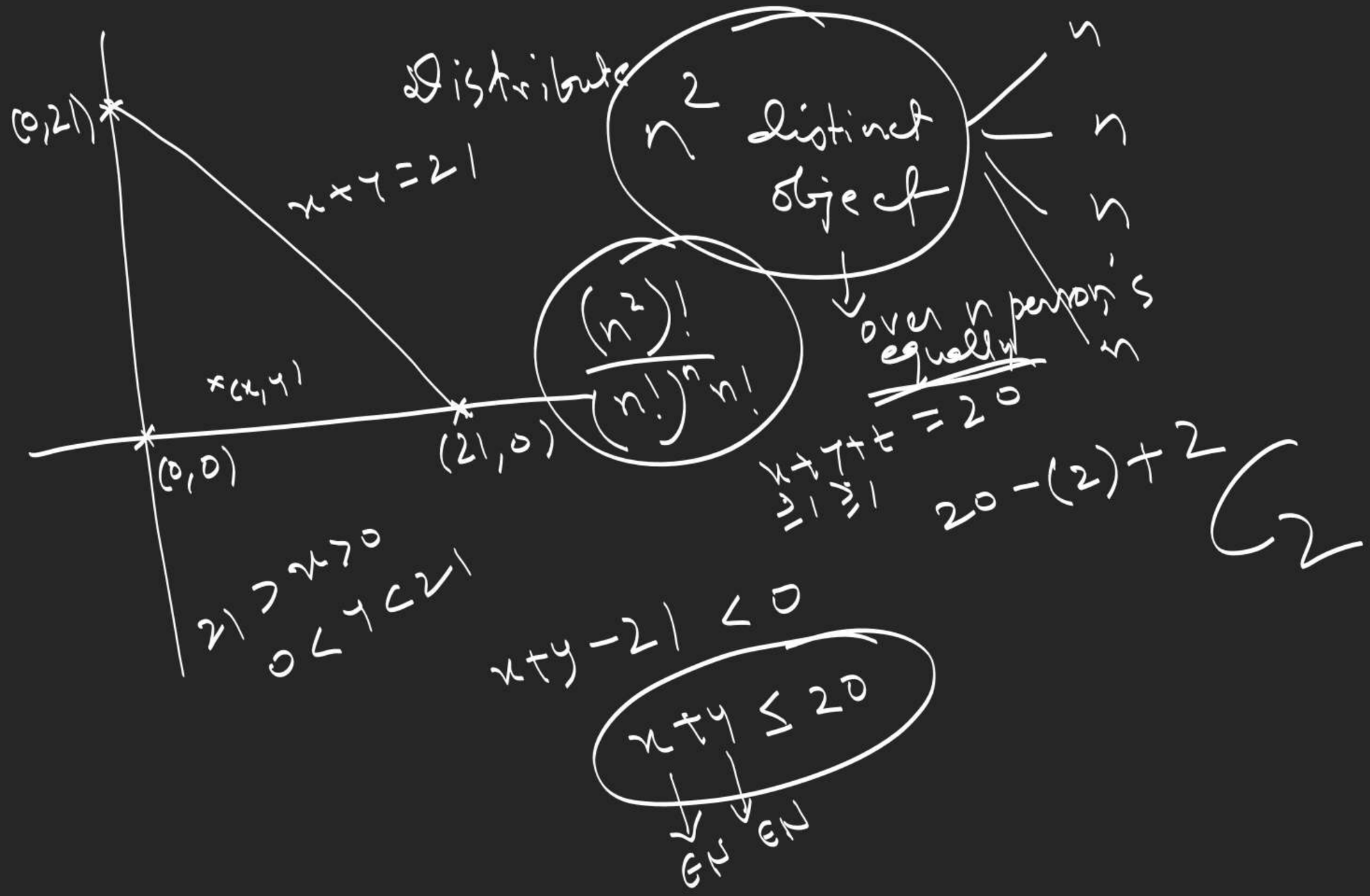
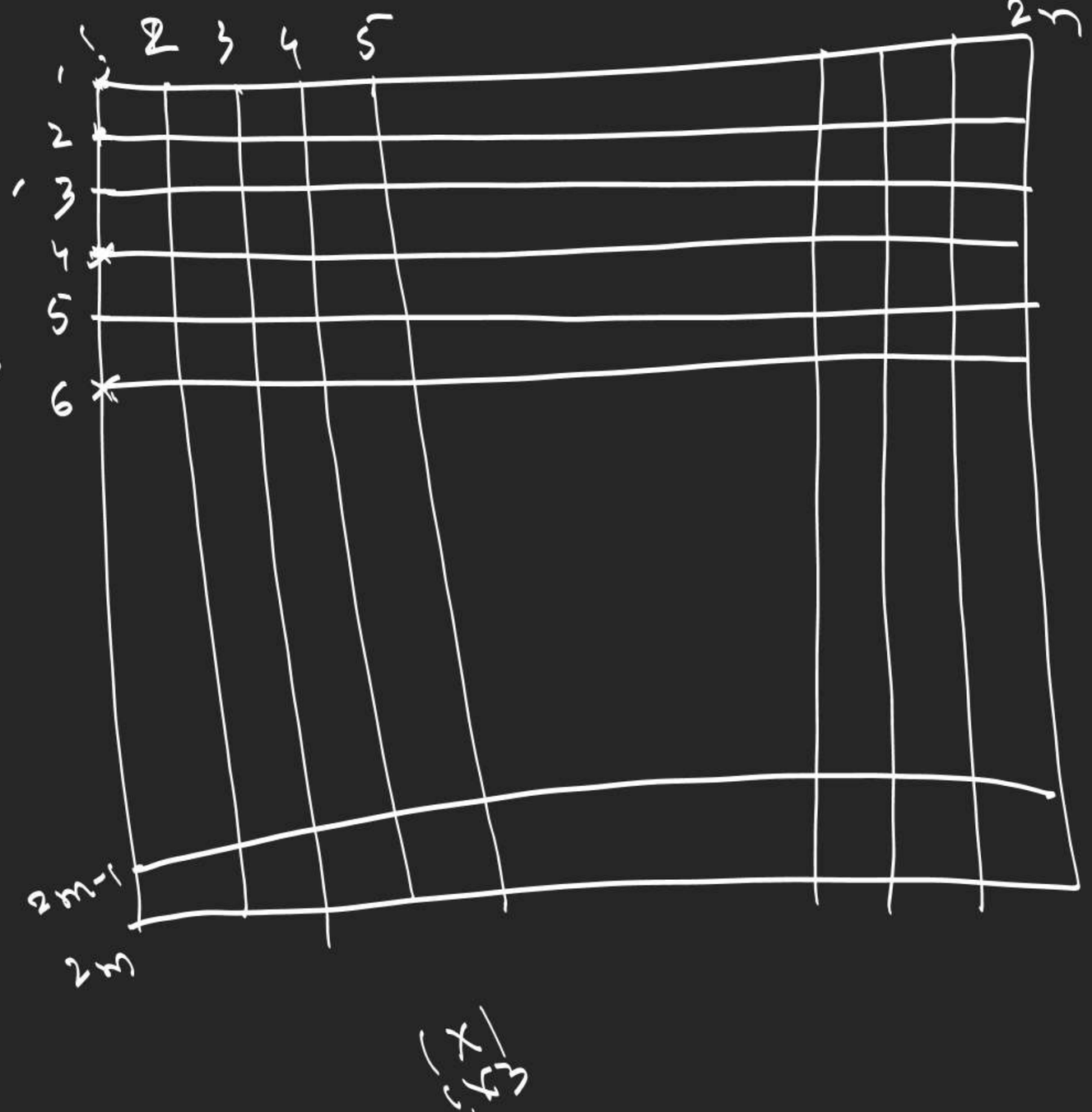


Nishant Jindal




$1\times1, 1\times3, 1\times5, \ldots 1\times(2n-1)$

$3\times1, 3\times3, 3\times5, \ldots$

$5\times1, 5\times3, \ldots$

$({}^{m}C_1\ {}^{m}C_1)({}^{n}C_1\ {}^{n}C_1)$

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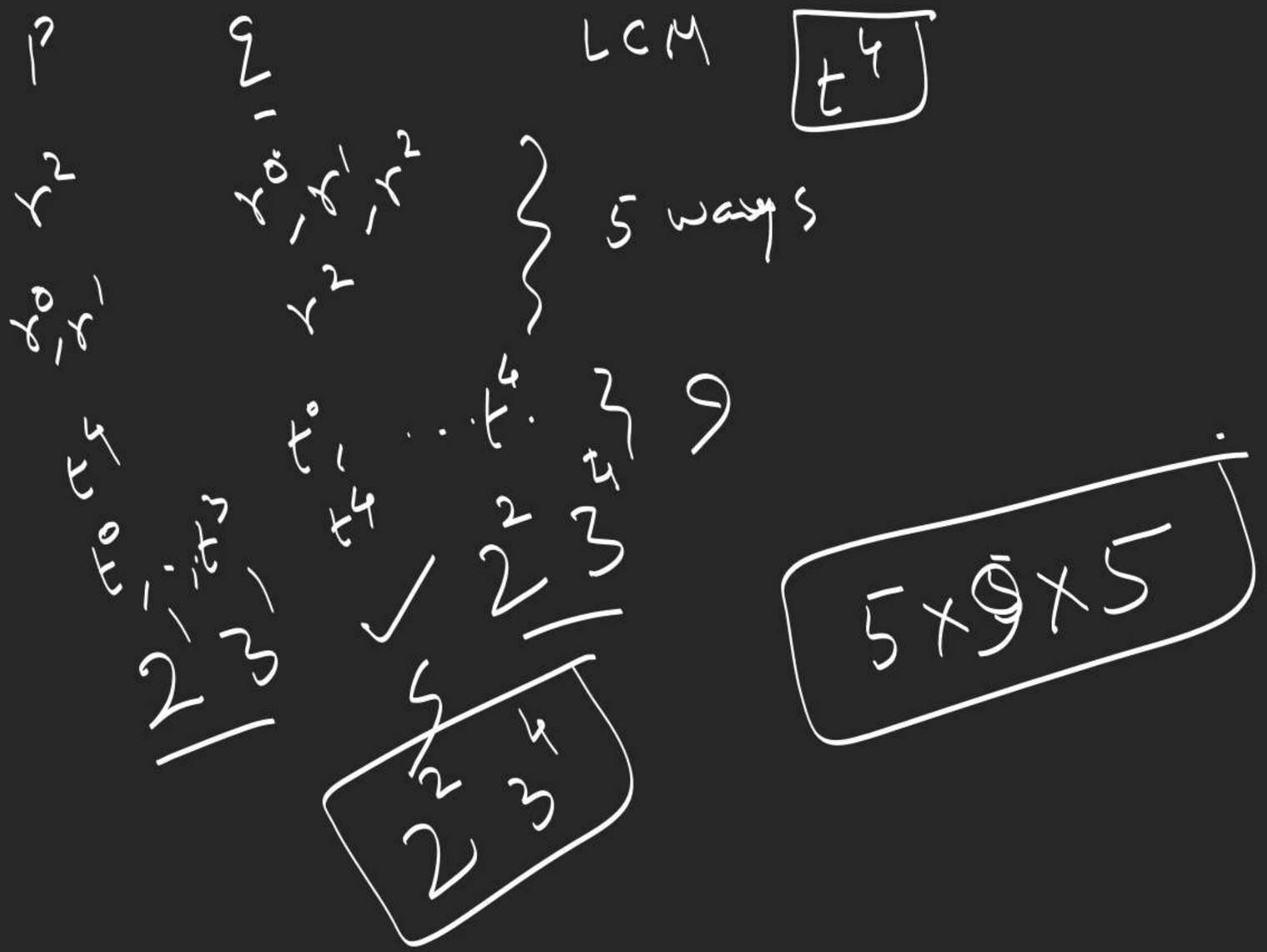

Nishant Jindal

$A \to \{1\}$ ✓ $\{2\}$

$B \to \{2\}$ $\{1\}$

$0$ $0,1,2,3,4 \to 2^4$

$1$ $1,2,3 \to {}^4C_2 + {}^4C_1\,{}^3C_2 + {}^4C_1\,{}^3C_3$

$1 \to$ only A

$1 \to$ only B

$1 \to$ none

Remaining P&C

Ex-I (Binomial)

$1,2,3,4$

$\frac{3^4-1}{2}+1$

$1$ $2,3$ $2$ $2 \to \frac{{}^4C_2}{2!}$

$2$ $1,3$

A $\phi$ ✓

B $\phi$

A $\phi$

B $\{1,2\}$