NPTEL

NPTEL ONLINE CERTIFICATION COURSE

Discrete Mathematics
Principle of Inclusion and Exclusion

Rook Polynomial

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So given a chessboard we ask this question, in how many ways can we place 1 rook? In how many ways can we place 2 rooks, and in how many ways can we place 3 rooks?
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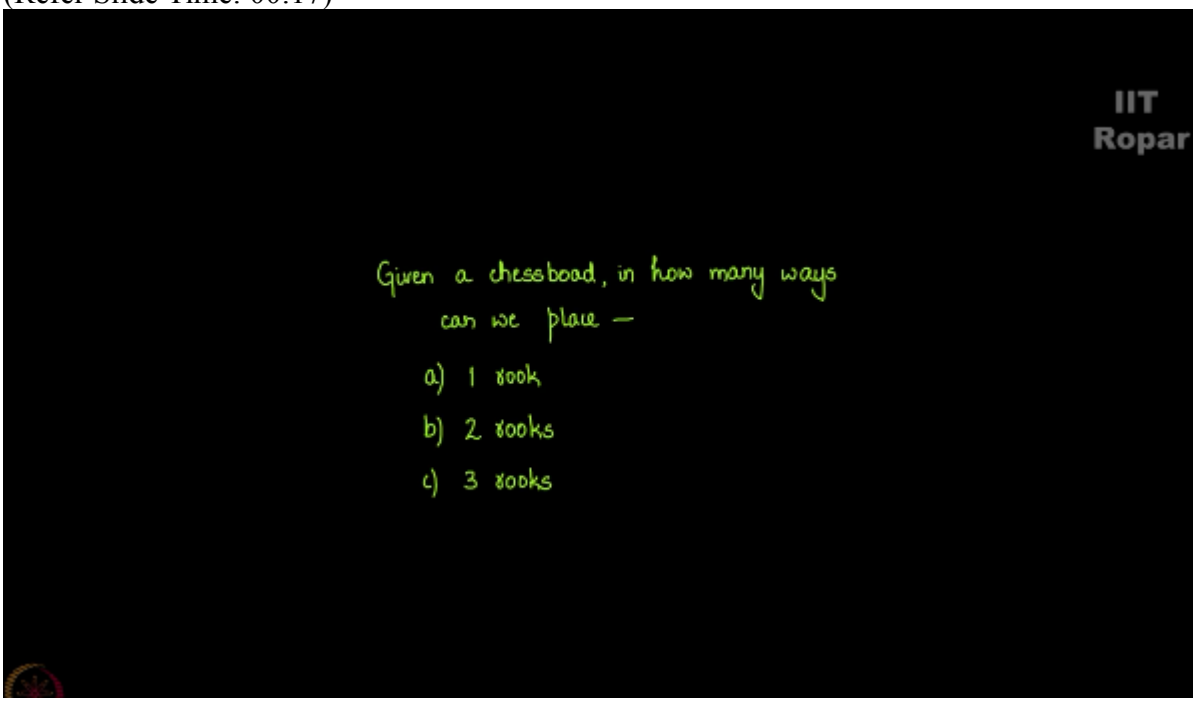

And then note down the numbers and write them as a polynomial like this, so we write it as a 0 rooks cannot be placed in anyway, so we simply write 1 here + 1 root can be placed in 9 ways so we write down 9X + 2 rooks can be placed in 12 ways, so we write 12X square, and 3 rooks can be placed in 3 ways, so we write 3X cube, so this is called a rook polynomial of a given chessboard,
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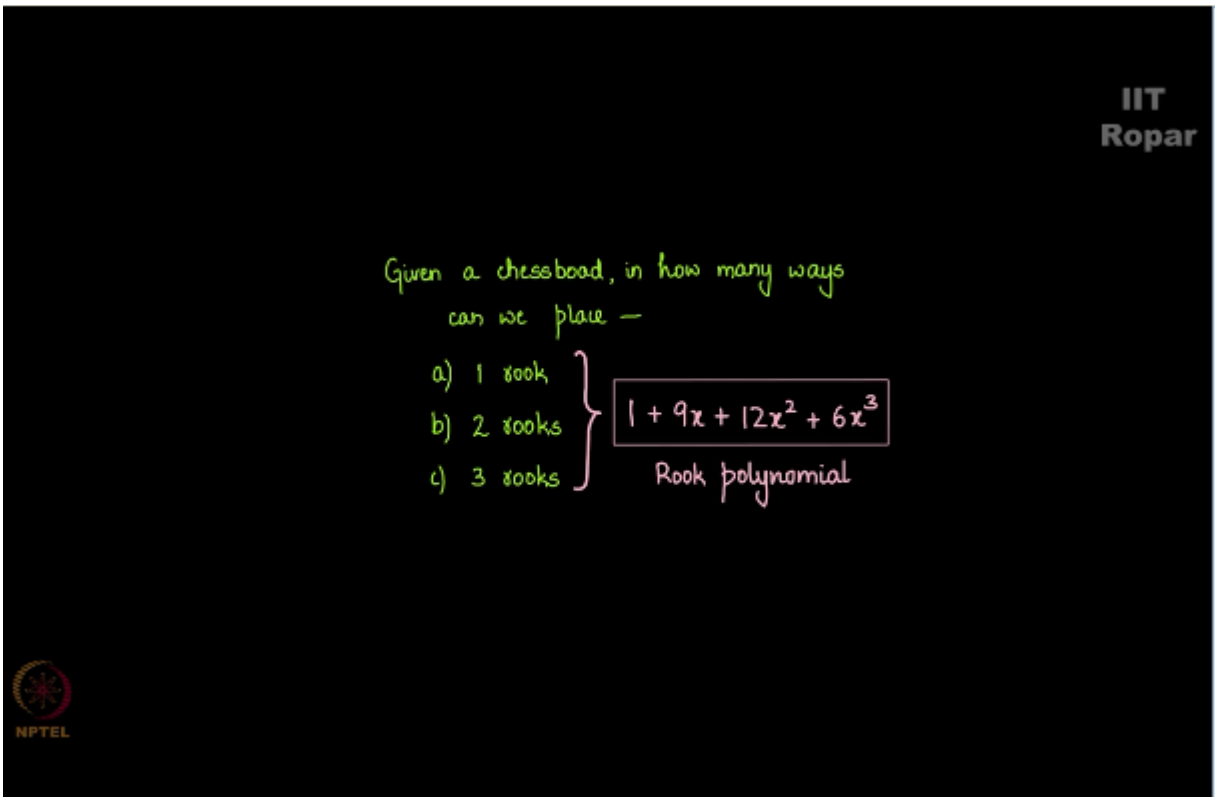

and this is how it is represented.

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