

Name row. col....

1.	2.	3.	4.	5.	Σ .

1. Use generating functions to find a_n if: $a_n = a_{n-1} + 6a_{n-1}$ and $a_0 = 2, a_1 = 1$.
2. Find a coefficient of x^{22} in $(x + x^2 + x^3 + x^4 + x^5)(x + x^2 + x^3 + x^4 + \dots)^6$.
3. A code is given by generator matrix: $\begin{bmatrix} 0111001 \\ 0000111 \\ 1001011 \end{bmatrix}$. This code detects ... errors and corrects ... errors.
Is it perfect? Find the parity check matrix. What was sent if at most one error has arisen during the transmission and the received word is a) 1001100 b) 1010010
4. Put O or Ω
 - a) $2^{\lg_3 n} = \dots (2^{\ln n})$
 - b) $(\ln n)^{\ln n} = \dots (\ln(n^{\ln n}))$
5. Proof that if G is a graph with n vertices than G has at most $\lfloor \frac{n}{\delta(G)+1} \rfloor$ components.

Name , row. col....

1.	2.	3.	4.	5.	Σ .

1. Use generating functions to find a_n if: $a_n = -a_{n-1} + 6a_{n-1}$ and $a_0 = 2, a_1 = -1$.

2. Find a coefficient of x^{19} in $(x^2 + x^3 + x^4 + x^5)(x^2 + x^3 + x^4 + \dots)^4$.

3. A code is given by generator matrix: $\begin{bmatrix} 1110101 \\ 1001100 \\ 1001011 \end{bmatrix}$. This code detects ... errors and corrects ... errors.

Is it perfect? Find the parity check matrix. What was sent if at most one error has arisen during the transmission and the received word is a)1100010 b)1001100

4. Put O or Ω

a) $3^{\lg_2 n} = \dots (3^{\ln n})$

b) $\ln(n^{\ln n}) = \dots ((\ln n)^{\ln n})$

5. Proof that if G is a graph with n vertices than G has at least $n - e(G)$ components.