CLASS 12 MATHEMATICS NCERT SOLUTIONS

NCERT Solutions for Class 12 Mathematics Chapter 3: Matrices – Free PDF Download

Complete, verified solutions to the NCERT Class 12 Maths Chapter 3 (Matrices) exercise questions. These Class 12 Mathematics Chapter 3 solutions are also useful as quick revision notes before exams.

Contents

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NCERT Exercise Solutions

3.1 In the matrix A = [[2,5,19,-7],[35,-2,5/2,12],[√3,1,-5,17]], write (i) the order, (ii) the number of elements, (iii) elements a_{21}, a_{33}, a_{23}.
Ans: (i) Order 3×4. (ii) 12 elements. (iii) $a_{21}=35$, $a_{33}=-5$, $a_{23}=5/2$.

3.2 How many possible orders are there for a matrix with 24 elements? With 13 elements?
Ans: 24 = 1×24, 2×12, 3×8, 4×6, 6×4, 8×3, 12×2, 24×1 ⇒ 8 possible orders. For 13 (prime): 1×13, 13×1 ⇒ 2 possible orders.

3.3 Construct a 2×2 matrix A=[a□□] whose elements are given by a□□=(i+j)²/2.
Ans: $a_{11}=(1+1)^2/2=2$, $a_{12}=(1+2)^2/2=4.5$, $a_{21}=(2+1)^2/2=4.5$, $a_{22}=(2+2)^2/2=8$. So A=[[2,4.5],[4.5,8]].

3.4 If A=[[1,1],[-1,1]], B=[[a,-a],[b,b]], find a,b such that $(A+B)^2=A^2+B^2$.
Ans: Expanding $(A+B)^2=A^2+AB+BA+B^2$, this equals A^2+B^2 only when AB+BA=0 (the zero matrix), not when AB=BA. Computing AB=[[a+b,b-a],[b-a,a+b]] and BA=[[2a,0],[0,2b]], so AB+BA=[[3a+b,b-a],[b-a,a+3b]]. Setting every entry to zero: b-a=0 gives b=a, and substituting into 3a+b=0 gives 4a=0, so a=0 and b=0.

3.5 (Express as sum of symmetric/skew-symmetric) For A=[[3,5],[1,-1]], express A as P+Q where P is symmetric and Q is skew-symmetric.
Ans: P=(A+A□)/2=[[3,3],[3,-1]], Q=(A-A□)/2=[[0,2],[-2,0]]. Check: P+Q=[[3,5],[1,-1]]=A. □

Class 12 Mathematics Chapter 3 – Notes and Extra Questions

Along with these NCERT Solutions, students can also use the Class 12 Mathematics Chapter 3 Extra Questions and Class 12 Mathematics Chapter 3 Revision Notes for quick revision and extra practice.

See also: Chapter 1 | Chapter 2

Practice more: Chapter 1 | Chapter 2

Quick revision: Chapter 1 | Chapter 2