

# IIT JAM 2023 Mathematics Question Paper (Memory Based)

**Question.**  $n^2 + 2n + 2$

**Question.**  $\sin 1/n$  and  $\sin 1/n^3$

**Question.**  $\int_0^1 x^{n+1} / x+1$   $n$  tend to  $\infty$

**Question.**  $\lim [1 + 1/2^n + 1/3^n + \dots + 1/2023^n]^{1/n} = ?$

**Question.** RANK OF  $AB$  is 0  $A$   $3 \times 4$  matrix  $B$   $4 \times 4$  then rank of  $\text{Max } B$

**Question.** write  $\sum 2n+1/(n^2+1)(n^2+2n+1)$

**Question.**  $y''+x^2 < 0$  then  $y(x) < 0$  in  $(0,1)$  or  $> 0$

**Question.**  $f''$  has exact two distinct roots then distinct roots of  $f'$  and  $f$

**Question.**  $\int_0^{\pi/2} \sin x \cos y dx dy$  double integration 0 to  $\pi/2$

**Question.**  $\sin(1/n^3)$  and  $\sin(1/n)$  convergence of both

**Question.**  $z = (x-1)^2 + (y-1)^2$  area between  $z = 2$  and  $3$

**Question.** Maximum number of an element in  $S_8, S_6$  (Order based question)

**Question.**  $p(x)$  to  $p(x^2)$  and find rank

**Question.**  $2n+1 / (n^2+1)(n^2+2n+2)$

**Question.**  $S_8$  max order?

**Question.** if sum of element of every row & every column is zero then dim of the subspace in  $M_3(\mathbb{R})$

**Question.** riemann integral

**Question.** Given A, AB is null then max rank of B

**Question.** A is  $3 \times 5$  matrix and B is  $5 \times 5$  then rank of B is?

**Question.** no. of elements in  $S_4$  having exact two cycles in NAT2