

Mathematics II

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Final Exam

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1. Find $\det A$ and compute A^{10} using diagonalization.

$$\begin{bmatrix} 2 & 1 & -1 \\ 0 & 2 & 1 \\ 0 & -3 & -2 \end{bmatrix}$$

2. Evaluate in two ways the double integral (using $dy dx$ and $dx dy$).

$$\iint (x^2 + 2y) \, dA$$

where the region A is bounded by $y = 0$, $y = x$, and $y = 2 - x$.

3. Evaluate the triple integral

$$\int_{-1}^1 \int_{y^2}^1 \int_0^{1-z} 3xyz \, dx \, dz \, dy$$

4. Find the interval of convergence for the series

$$\sum \frac{(x+2)^n}{n^2 \times 2^n}$$