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For Questions, Notes, Syllabus & Results

MA 8352 Linear Algebra and Partial Differential Equations

Important 2mark questions

Unit I

1. Determine whether the vectors $v_1 = (1, 2, 1), v_2$ = (2, 1, 0) and v_3 = (1, -1, 2) form a linearly independent or linearly dependent in v_3(R).
2. What are the possible subspace of R?
3. If V = A + B, then show that dim V = dim A + dim B.

Unit II

1. Define Kernal of T.
2. State the dimension theorem for matrices.
3. Verify that T: R^3->R, and T(u) = |u| is a linear transformation or not.

Unit III

1. Define Adjoint matrix.
2. Let R^2 have the weighed Euclidean inner product defined as <u, u>=2u_1v_1 + 3u_2v_2 and let u = (1, 1), v = (3, 2), w = (0, -1). Compute the value of <u + v, 3w>.
3. Let P_2 have the inner product <p, q> = $\int_{-1}^{1} p(x)q(x)dx$. Find the angle between p and q, where p = x and q = x^2 with respect to the inner product on P_2.

Unit IV

1. How the second order partial differential equations are classified?
2. Solve pq + p + q = 0.
3. Find the differential equation of all spheres whose centres lie on the Z-axis.

Unit V

1. Write the formula for Half range Fourier sine series.
2. State giving reasons whether the function $f(x) = tanx$ can be expanded in Fourier series in the interval of $(-\pi, \pi)$.
3. A slightly stretched string of length l has its ends fastened at x = 0 and x = l is initially in a position given by $y(x, 0) = y_0 \ sin \frac{3\pi x}{l}$. If it is released from rest from this position, write the boundary conditions.