九十六學年度研究所碩士班考試入學 生物機電工程學系碩士班 工程數學考科

第1頁,共1頁

- 1. Solve $y'' y' 2y = \sin x$.
- 2. Solve $y'' + 2ky' + (k^2 + k^{-2})y = 0$
- 3. $f(t) = t \sin(\omega t)$, find its Laplace transform
- 4. Find the eigenvalues and eigenvectors of the matrix $A = \begin{bmatrix} 1 & 0 & \sqrt{2} \\ 0 & 2 & 0 \\ \sqrt{2} & 0 & 0 \end{bmatrix}$.
- 5. **A**=[1, 1, 1], **B**=[3, -1, 2], **C**=[2, 1, 4], and **D**=[3, 3, 10] are vectors in (a) & (b) and points in (c).
 - (a) Find the angle between A and B.
 - (b) Find the component of **A** in the direction of **B**.
 - (c) Find the volume of a tetrahedron with the vertices at points A, B, C, D.