

On completion of this unit successful students will be able

- Calculate orientation of bases in vector space
- State the Euler Theorem about rotation in \mathbf{E}^3 ; calculate the axis and an angle of rotation in \mathbf{E}^3 which is produced by an orthogonal operator preserving an orientation.
- Define differential 1-form in \mathbf{E}^n . Calculate the values of 1-forms on vectors, Calculate differential of functions and the directional derivative of function along vector.
Calculate integral of a differential 1-form over curve. Simplify these calculations in the case if a form is an exact form.
- Establish relations between analytical and geometrical definitions of conic sections. In particular find foci of ellipses, focus and directrix of parabola given by analytical expressions.
- Find cross-ratio of four collinear points on projective plane. Find projective transformations of conic sections.