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BOOK REVIEW

Differential Geometry of Curves and Surfaces, by Victor Andreevich Toponogov, Birkhäuser, Basel, 2005, xi + 206 pp., ISBN 0-8176-4384-2

The author of this book is the remarkable Russian mathematician V. A. Toponogov (1930–2004), specialist in Riemannian geometry in the large and one of the founders of CAT(k)– spaces theory.

The book is devoted to differential geometry of curves and surfaces in three-dimensional Euclidean space. It consists of three chapters. The first chapter – *Theory of curves in three-dimentional Euclidean space and in plane* is structured into twelve sections. The second chapter – *Extrinsic geometry of surfaces in three-dimentional Euclidean space* is splited into ten sections and the last chapter *Intrinsic geometry of surfaces* consists also of ten sections. The material is presented in two parallel streams.

The first stream treats the standard theoretical material on differential geometry of curves and surfaces complemented by certain number of exercises and problems of a local nature. It includes eight sections of first chapter and six sections of second chapter.

The *first Chapter* contains the following standard themes of differential geometry of curves: definition and methods of presentation of curves, tangent line, osculating plane, length of a curve, curvature of a curve, torsion of a curve, the Frenet formulas and the natural equations of a curve. All definitions are geometrical. For example: a plane α is called an osculating plane to a curve γ at a point P if $\lim\limits_{d\to 0} \dfrac{h}{d^2} = 0$ where d is the length of the chord of γ joining the points P and $\tilde{P}$, and h is the length of the perpendicular drown from $\tilde{P}$ onto the plane α. Equations for tangent line and osculating plane are deduced. Formulas for calculation of the length, of the curvature and of the torsion of a curve are derived. The fundamental theorem of curves theory is proved.

The *second Chapter* continues with the others standard themes of differential geometry of surfaces: definition of (embedded and immersed) surface, tangent