# Summary


## The Classification of the Pedal Surfaces of (1,2) Congruences

In the first chapter the congruences of 1st order and 2nd class in the Euclidean space $E^3$ are classified according to the section with the plane at infinity. Eight types of the congruences have been obtained.

In the second chapter, the pedal surfaces of such congruences with the finite pole $P$ are treated as the images of the plane at infinity given by quartic inversion with respect to the original congruences and the pole $P$. It is proved that the pedal surfaces are the 4th order and that they contain the absolute conic and double straight line. Their essential constructive properties are examined by the special plane sections. The basic classification is obtained according to the type of the primary congruence. It is shown that there are no real simple lines on the first type surfaces, whears on the surfaces of the II, III, IV and V type there are two, three, four and five real simple lines, respectively. For the rest of the types it is shown that the pedal surface breaks up into the general cubic (types VI and VII), or rulled cubic (type VIII), and the plane.

In the third chapter the parametric and homogenious equations of the surfaces are derived. The Mathematica notebook, which contains the definitions of the drawing functions and the pictures of the surfaces, is presented here.

In the fourth chapter algebraic properties of singular points on quartics are examined. It is shown that the double line lying on the proper quartics (types I-V) might posses two triple points, binodes, unodes and isolated points, while out ot the double line there might exist conical and binodal points. The functions which calculate coordinates of the singular points for each surface are define in Mathematica 4.0. Full classification of the I-V type surfaces is made according to the number and kind of their singular points. Eighty types are obtained. Each type is illustrated by Mathematica graphics.