

A LESSON ON TANGENTS TO SECOND DEGREE CURVES IN THE MATH PROFILED TRAINING

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Abstract. *According to the current high school curricula in Bulgaria, tangents to second degree curves (conic sections) are studied by students in the profiled math training in the 12th grade. The two main problems that students have to learn how to solve are to obtain the equation in Cartesian coordinates of the unique tangent at an arbitrary point of a given curve, as well as to find the equations of the two tangents through a point not lying on the curve, in the case when they exist. For determining the single tangent at a point of the curve, there are well-known formulas given in the textbooks, which the students can easily use. Difficulties arise when constructing tangents from an external point for a given curve. For this reason, a variety of problems and exercises are needed to improve the mathematical training of the students on this topic. Since the textbooks contain limited number and types of examples, the main idea of this work is to support and expand the knowledge of the students. The paper presents problems with methodological comments and instructions aimed at consolidating the knowledge and improving the skills of the students to analytically determine and study tangents to circles, ellipses, hyperbolas, and parabolas. In our opinion, this paper can be useful to mathematics teachers and students in the math profiled training for deepening their knowledge and preparation for the state final exam.*

Key words: Second Degree Curve, Conic Section, Tangent.

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