

1077-F1-828

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Our goal is to draw attention to the fact that basic ideas from elementary linear algebra in  $\mathbb{R}^2$  provide powerful tools for solving nontrivial problems in plane geometry. To prove our point we present solutions of four geometry problems from four consecutive International Olympiads (2007-2010) using linear algebra. Standard preparation of students participating in mathematics competitions emphasizes classical geometric methods while neglecting linear algebra. This is true also for every student in a College Geometry course. Concepts of linear algebra are present in practically all areas of mathematics. Using linear algebra when practicing solving geometry problems students will use their creativity with ideas they are most likely use in the future. On the other hand, while classical geometry is beautiful, it has a rather limited area of usefulness. Moreover, geometric proofs often require quite ingenious ideas and thus are prohibitively difficult for many students. Since the proofs based on linear algebra are more straightforward, the same problems become accessible to a larger number of students. (Received September 13, 2011)