

# On dependence between variables in mathematical problems

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This talk is prepared on the occasion of the 150th anniversary of Mihailo Petrović birth.

In Journal “Mathematical journal for high school students”<sup>1</sup> published in Belgrade in the 1930s, the article under title “On dependence between variables in mathematical problems” was published by Mihailo Petrović.

On simple examples from elementary mathematics, Mihailo Petrovic explains and illustrates the fact that among known and unknown variables in mathematical problems there are dependencies that define domains in which problems are given and indicate when these problems are impossible.

Authors are going to illustrate the ideas of Mihailo Petrović by two examples.

1. Determine catheti  $a$  and  $b$  of right-angled triangle, if  $a + b = 8$  and hypotenuse  $c$  is equal to 5.
2. Determine volume of regular triangle-based pyramid if the side edge of pyramid is equal to 3, and the area of the cross-section of the pyramid and the plane, containing one basic edge of the pyramid and which is normal on the opposite side edge, is equal to 14.<sup>2</sup>

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<sup>1</sup>Owner and editor of this journal was Prof. Dr. Jovan Karamata, and the members of editorial board were mathematicians from the whole Kingdom of Yugoslavia

<sup>2</sup>This problem was one of the problems for entrance exam for Mathematical Gymnasium in 2017