

CODEMA 2022

**BOOK OF
ABSTRACTS**

Ohrid, September 25-28, 2022

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SOLVING TASKS FROM LINEAR PROGRAMMING USING GEOGEBRA

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Abstract. Every new generation of students are having difficulties with solving mathematics problem. Some have problems in mastering the material, others in solving homework assignments, others have problems with quickly forgetting what they have been learned, others think that they would lose a lot of time solving the task and, in the end, they might get an incorrect result and it reduces the desire to solve and so on. The best in the memories of the students remains the material for the mathematical subjects which is presented graphically and the tasks whose solution is got graphically. Even more if software is used during the solution and the graphic representation is precise and the solution can be clearly seen from it there would be no problem. In this paper, we will present the solution of examples of linear programming with the graphical method so that the graphical representation is made with the help of free software. The software allows graphic editing to be done get in a quick and simple way which is very important for students.

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References

- [1] Karamazova Gelova E., Krstev A. (2022) Основи на геогейбра – примена во наставата и пракса, скрипта. ISBN 978-608-244-883-1.
- [2] Trifunov Z., Jusufi Z. T., Karamazova E., Atanasova-Pacemska T. (2019), Importance of Visualization in Math Problems at the Universities, South East European Journal of Sustainable Development, 3 (1). pp. 17-23. ISSN 2545-4463
- [3] Trifunov Z., Karamazova E. (2014) Visualization of discrete random variables, Proceedings of the V Congress of mathematicians of Macedonia. pp. 108-116. ISSN 978-9989-646-69-0
- [4] Atanasova-Pacemska T., Gunova V., Kocova Lazarova L., Pacemska S. (2016) Visualization of the Geometry Problems in Primary Math Education -Needs and Challenges-, IMO-Istrazivanje matematickog obrazovanja, 8 (15). pp. 33-37. ISSN 2303-4890 (print), 1986-518X (on line)

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- [5] Cerqueira, G. R., Pires, V. C., & Campos, D. S. (2021). Linear programming problems in high school using GeoGebra. *Revista de Ciência da Computação*, 3(1), 12-16.
- [6] Molnár, P. (2016). Solving a linear optimization word problems by using GeoGebra. *International Journal of Information and Communication Technologies in Education*, 5(2), 16-28.
- [7] Frank, A., Ablordeppey, V., & Ntow, A. S. (2022). Effect of Apos Instructional Approach with Geogebra on Pre-Service Teachers' Performance in Linear Programming. *JOURNAL OF ALGEBRAIC STATISTICS*, 13(3), 4046-4068.
- [8] Rahman, O., & Johar, R. (2021, May). Improving high school students' critical thinking ability in linear programming through problem based learning assisted by GeoGebra. In *Journal of Physics: Conference Series* (Vol. 1882, No. 1, p. 012070). IOP Publishing.

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