

Figure 7. Solving the problem of finding the optimal route between two network nodes (output in Wolfram Mathematica)

to node 12, router 1 will choose a new shortcut. The solution to find the optimal route between two nodes in the changed network configuration is shown in Fig.8.

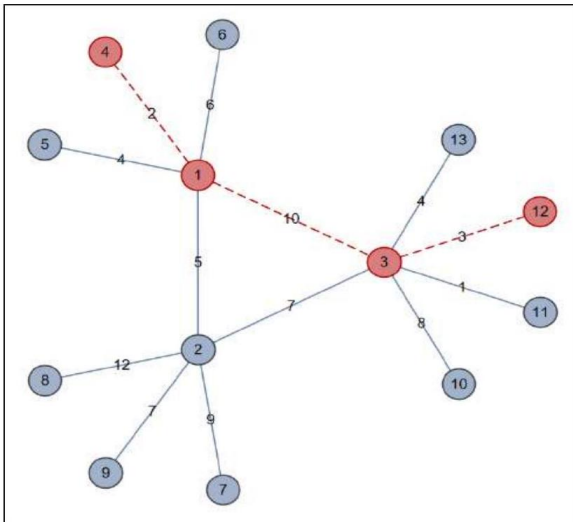


Figure 8. Solving the problem of finding the optimal route between two network nodes in updated topology (output in Wolfram Mathematica).

The results obtained and considered include labor-intensive for implementation in programming languages graphics problems, as well as mathematically and algorithmically complex problems of the subject area. Presented options of visualization, finding a solution require only a careful study of examples of the help system Wolfram Mathematica, certain programming skills, i.e. are available to most software engineers. Transferring results to other software applications isn't difficult either, because WM provides export options in any standard format.

VII. CONCLUSION

Programming language, high level of documentation, features of step-by-step problem solving and graphical visualization of initial data and compu-

tational results favorably differentiate Mathematica from other CAS. These features combined with an intelligent predictive interface help subsystem, provide wide range of opportunities for integrating Wolfram Language functions with components of Ecosystem OSTIS. The presented example of addition of intellectual educational resource built within the ostis-system for discipline "Computer Systems and Networks" illustrates connection of difficult for programming functions of visualization and solution of complex mathematical problem of finding the optimal path in the info-communication network with a complex topology.

REFERENCES

- [1] V. Golenkov, N. Guliakina, and D. Shunkevich, Otkrytaja tehnologija ontologicheskogo proektirovaniya, proizvodstva i jekspluatatsii semanticheski sovmestimyh gibridnyh intellektual'nyh komp'yuternyh sistem [Open technology of ontological design, production and operation of semantically compatible hybrid intelligent computer systems], V. Golenkov, Ed. Minsk: Bestprint [Bestprint], 2021, P. 690 (In Russ.)
- [2] GeoS — Geometry Problem Solver. Available at: [https:// geometry.allenai.org](https://geometry.allenai.org) (accessed 2023, Feb).
- [3] Recognition. Available at: <https://mathpix.com/handwriting-recognition> (accessed 2023, Feb).
- [4] Create Graph online and find shortest path or use other algorithm. Available at: <https://graphonline.ru/en> (accessed 2023, Feb).
- [5] M. Kovalev, A. Kroshchanka, V. Golovko, Convergence and integration of artificial neural networks with knowledge bases in next-generation intelligent computer systems. Otkrytye semanticheskie tekhnologii proektirovaniya intellektual'nykh sistem [Open semantic technologies for intelligent systems], 2022, pp. 173-186.
- [6] V. D'yakonov, Entsiklopediya komp'yuternoi algebr [Encyclopedia of Computer Algebra], Moscow, DMK Press, 2009, P. 1264 (In Russ.)
- [7] List of computer algebra systems. Available at: http://en.wikipedia.org/wiki/List_of_computer_algebra_systems (accessed 2023, Mar).
- [8] V. Taranchuk, Osnovnye funktsii sistem komp'yuternoi algebr [Basic Functions of Computer Algebra Systems] : posobie dlya studentov fak. prikladnoi matematiki i informatiki, Minsk, BSU, 2013, P. 59. (In Russ.)
- [9] Maxima, Sistema komp'yuternoi algebr [Maxima, Computer Algebra System]. Available at: <http://maxima.sourceforge.net/ru> (accessed 2023, Feb) (In Russ.)
- [10] N. Stakhin, Osnovy raboty s sistemoi analiticheskikh (simvol'nykh) vychislenii Maxima [Fundamentals of working with the system of analytical (symbolic) calculations Maxima]. (PO dlya resheniya zadach analiticheskikh (simvol'nykh) vychislenii), Moscow, Federal'noe agentstvo po obrazovaniyu, 2008. 86p. (In Russ.)
- [11] AXIOM. The Scientific Computation System. Available at: <http://axiom-developer.org> (accessed 2023, Feb).