

1145-L1-1223

Michael E Gage* (gage@math.rochester.edu), Department of Mathematics, University of Rochester, Rochester, NY 14627. *Using WeBWorK with WebSim, SageMath and Geogebra to teach the simplex method, linear algebra and other aspects of a Linear Optimization course.* Preliminary report.

This talk will present recent innovations in using WeBWorK and other open source software to teach the simplex method and other aspects of linear algebra in a Linear Optimization course. In particular the JavaScript program WebSim designed by Prof. Glenn Hurlbert (VCU) can now interoperate with WeBWorK reducing the tedium of entering and manipulating data by hand while still requiring students to understand the simplex procedure.

The “scaffold” question type creates a sectioned worksheet where students must complete the first segments before the next segment is presented. The sectioned worksheet forces a careful step-by-step analysis and explanation of two and higher dimensional examples and leads students to a deeper understanding of both the simplex method and procedures from their previous matrix algebra course.

Since this course was first taught 4 years ago the pool of WeBWorK questions has grown in size, quality and variety of topics. There are new tools for authoring questions incorporating tableaus.

Automatic grading allows this homework to be used in large classes or assigned as optional independent study.

The interoperability of the open source WeBWorK, WebSim, Geogebra, MathSage systems provides an excellent platform for further exploration. (Received September 20, 2018)