

ZMATH 2013b.00662

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An alternative method to Gauss-Jordan elimination: minimizing fraction arithmetic.

Math. Educ. (Athens) 20, No. 2, 44-50 (2011).

Summary: When solving systems of equations by using matrices, many teachers present a Gauss-Jordan elimination approach to row reducing matrices that can involve painfully tedious operations with fractions (which is called the traditional method). In this essay, an alternative method to row reduce matrices that does not introduce additional fractions until the very last steps is presented. The students seemed to appreciate the efficiency and accuracy that the alternative method offered. Freed from unnecessary computational demands, students were instead able to spend more time focusing on designing an appropriate system of equations for a given problem and interpreting the results of their calculations. The author found that these students made relatively few arithmetic mistakes as compared to students tutored in the traditional method, and many of these students who saw both approaches preferred the alternative method.

Classification: H60

Keywords: simultaneous equations; matrices; Gaussian elimination; linear algebra; avoiding fractions; alternative Gaussian approach