

Fri Mar 9 09:07:53 MST 2007

/m333.sp07/handouts333/q309/q309_333

These are alleged answers. For each error herein, you get extra-credit points for being the first to report it by e-mail.

- 1 Matrix Cramer is part of the matrix-theory aspect of this course. It is described in the 2/21/07 diary, for instance ([click here](#)).

To solve

$$\begin{aligned}3x - 4y &= 17 \\5x + 9y &= 2\end{aligned}$$

via Matrix Cramer, we first write down the system in matrix form:

$$\begin{bmatrix} 3 & -4 \\ 5 & 9 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 17 \\ 2 \end{bmatrix}.$$

Then Matrix Cramer says that the unknowns x and y can be found from

$$\begin{bmatrix} x \\ y \end{bmatrix} = \frac{1}{47} \begin{bmatrix} 9 & 4 \\ -5 & 3 \end{bmatrix} \begin{bmatrix} 17 \\ 2 \end{bmatrix} = \frac{1}{47} \begin{bmatrix} 161 \\ -79 \end{bmatrix} = \begin{bmatrix} 161/47 \\ -79/47 \end{bmatrix}.$$

So that $x = 161/47$ and $y = -79/47$.

Matrix Cramer is probably the fastest way to solve systems of two equations in two unknowns which have a single solution. It does not scale up very well to larger systems.