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

\[
\begin{align*}
3x - 4y &= 17 \\
5x + 9y &= 2
\end{align*}
\]

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.