These are intended as by-hand calculations. The arithmetic shouldn’t be too hard.

1. Use Cramer’s Rule to compute
   \[
   \begin{bmatrix}
   3 & -8 \\
   4 & 11
   \end{bmatrix}
   \]

2. Use Gauss-Jordan Elimination to compute
   \[
   \begin{bmatrix}
   1 & 2 & 3 \\
   2 & 3 & 4 \\
   3 & 4 & 6
   \end{bmatrix}
   \]
   (if possible).

3. Use Gauss-Jordan Elimination to compute
   \[
   \begin{bmatrix}
   1 & 2 & 3 \\
   2 & 3 & 4 \\
   0 & 1 & 2
   \end{bmatrix}
   \]
   (if possible).

4. Consider the system
   \[
   \begin{align*}
   x' &= 3x + 4y \\
   y' &= 4x - 3y
   \end{align*}
   \]
   As in the last problem on Test #2, make a labeled direction-field plot for this system showing:
   (a) the locus where \( x' = 0 \) and the field direction at points thereon
   (b) the locus where \( y' = 0 \) and the field direction at points thereon
   (c) solutions which lie on straight lines through the origin
   (d) some representative direction arrows at points in all the regions not falling into one of
       the above two categories.

Make a guess as to where solutions which lie on straight lines through the origin might lie.

5. Repeat problem 4 for the system
   \[
   \begin{align*}
   x' &= 3x + 4y \\
   y' &= -4x + 3y
   \end{align*}
   \]