(Instructions:) Read the directions for each problem carefully. Complete each problem and place your answer on the respective answer line. Show your work on the provided paper or on scratch paper with each problem clearly labeled - correct answers with incorrect work or no work will be marked wrong and no credit given. No TI-89 calculators.
1. Solve the following system of equations (using any method) and describe the system as inconsistent, independent, or dependant.

\[ 5x - 6y = 23 \]
\[ x = 6 - 3y \]

1: __________________________
1b: __________________________

2. Solve the following system of equations (using any method) and describe the system as inconsistent, independent, or dependant.

\[ y - 3x = 5 \]
\[ 3(x+1) = y - 2 \]

2: __________________________
2b: __________________________
3. Solve the following system of equations (using any method) and describe the system as inconsistent, independent, or dependant.

\[
\begin{align*}
2x + y &= 9 \\
4x + 2y &= 10
\end{align*}
\]

3: _____________________________
3b: _____________________________

4. Solve the following system (without using matrices)

\[
\begin{align*}
x - 2y - 3z &= 4 \\
2x - 4y + 5z &= -3 \\
5x - 6y + 4z &= -7
\end{align*}
\]

4: _____________________________
5. Solve the following system (without using matrices)

\[ x + 2y + z = 4 \]
\[ 2x - y - z = 3 \]
\[ 2x + 4y + 2z = 8 \]

5: ________________________________

6. Solve the following system (without using matrices)

\[ -2x + y - 3z = 6 \]
\[ 4x - y + z = 2 \]
\[ 2x - y + 3z = 1 \]

6: ________________________________
7. Solve the following systems of non-linear equations (find and check all solutions).

\[
\frac{2}{x} + \frac{3}{2y} = \frac{11}{4} \\
\frac{5}{2x} - \frac{2}{y} = \frac{3}{2}
\]

7: _________________________

8. Solve the following systems of non-linear equations (find and check all solutions).

\[
y - xy = -10 \\
x - 2y = -7
\]

8: _________________________

9. Solve the following systems of non-linear equations (find and check all solutions).

\[
y = \log(2x + 4) \\
y = 1 - \log(x-2)
\]

9: _________________________
10. Find the values for all the parameters using the method of partial fractions.

\[
\frac{x^2 + x - 31}{(x+3)^2(x-2)} = \frac{A}{x+3} + \frac{B}{(x+3)^2} + \frac{C}{x-2}
\]

10: _______________________

11. Determine the size of the matrix

\[
\begin{bmatrix}
1 & 2 & 3 & 2 & 1
\end{bmatrix}
\]

11: _______________________

12. Determine the size of the matrix

\[
\begin{bmatrix}
1 & 2 & 2 & 1 \\
1 & 0 & 0 & 1
\end{bmatrix}
\]

12: _______________________
13. Write the system of equations as an augmented matrix. **Do Not Solve unless you just want extra practice, I guess you could go ahead and solve it then.**

\[\begin{align*}
2x + 2y + 2z &= 2 \\
3x + 3y + 5z &= 4 \\
2x - 2y - 2z &= 0 \\
\end{align*}\]

13: __________________________

14. If possible, perform the stated operation, otherwise state UNDEFINED

a.
\[
\begin{bmatrix}
1 & 2 & 1 \\
1 & 0 & 0
\end{bmatrix}
+ 
\begin{bmatrix}
1 & 2 & 1 \\
1 & 0 & 0
\end{bmatrix}
\]

a: __________________________

b.
\[
\begin{bmatrix}
1 & 2 & 1 \\
1 & 0 & 0
\end{bmatrix}
- 
\begin{bmatrix}
1 & 2 & 1 \\
1 & 0 & 0
\end{bmatrix}
\]

b: __________________________

c.
\[
\begin{bmatrix}
1 & 2 \\
1 & 0
\end{bmatrix}
\begin{bmatrix}
1 & 2 \\
1 & 1
\end{bmatrix}
\]

c: __________________________
d.
\[
\begin{bmatrix}
1 & 2 \\
1 & 0
\end{bmatrix}
\begin{bmatrix}
1 \\
2
\end{bmatrix}
\]
d:__________________________

e.
\[
\begin{bmatrix}
1 & 2 \\
2 & 1
\end{bmatrix}
\begin{bmatrix}
1 & 2 \\
1 & 1
\end{bmatrix}
\]
e:__________________________

f.
3 \[
\begin{bmatrix}
1 & 2 & 3 \\
1 & 1 & 3
\end{bmatrix}
\]
e:__________________________

**TAKE HOME STYLE QUESTIONS**

1. Solve the following questions using:
   A. Substitution and addition methods
   B. Elementary row operations: (aka. Gaussian Elimination or the matrix methods from class)
   C. Cramer’s Rule: (determinant methods)
a.

\[3x + y = 10\]
\[x + y = 6\]

1a: ____________________________

b.

\[2x + y = -4\]
\[3y - z = -1\]
\[x + 3z = -16\]

1b: ____________________________