Recommended problems are not to be turned in. Turn in this sheet, not your scratch paper. Hint: the numeric answers are positive or negative digits.

Page 6.

1(3). \( x + 2y = 8 \)
\( 3x - 4y = 4 \)

(a) Solve entirely by substitution, no row operations

(b) Put the system in echelon form using row operations. Then solve with constant substitutions.

(c) Reduce the system to reduced echelon entirely by row operations (no substitutions).

In 2, 4, 6, 10, use elementary row operations to convert the system to a reduced row echelon system. If there is no solution, write "inconsistent" or "\( \emptyset \)". If there is more than one solution, write the general solution in terms of one or more arbitrary parameters.

2(3). \( 2x - 3y + 4z = -12 \)
\( x - 2y + z = -5 \)
\( 3x + y + 2z = 1 \)

Reduced row echelon system:

Solution: ___________________________________ total=5-2z

10(2). \( x + y = 1 \)
\( 2x - y = 5 \)
\( 3x + 4y = 2 \)

Reduced row echelon system:

Solution: ___________________________________ total=1

12(2). Convert to an augmented matrix, put the matrix into reduced echelon form, write out the solution.

\begin{align*}
2x + 3y - z &= 6 \\
3x + 2y &= 1 \\
5x + 2y &= 1 \\
\end{align*}

Reduced row echelon system:

Solution: ____________________.

14(2). Convert to an augmented matrix, put the matrix into reduced echelon form, write out the solution.

\begin{align*}
2x + 3y - z &= 6 \\
2x - y + 2z &= -8 \\
3x - y + z &= -7 \\
\end{align*}

Reduced row echelon system:

Solution: \( x = \______, \ y = \______, \ z = \______ \). total= -1

20(2). Find the \( r \) (don't need to show your work) such that \( x = 1, y = 2, z = r \) is a solution to

\begin{align*}
2x + 3y - z &= 11 \\
x - y + 2z &= -7 \\
4x + y - 2z &= 12. \quad r = \______ \quad \text{Should be a negative digit.}
\end{align*}