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9.3 Systems of Equations in Three Variables

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- ### Solving a system of 3 equations & 3 unknowns
- Clear each equation of fractions and put it in standard form.
 - Choose two of the equations & eliminate one of the variables by forming a linear combination.
 - Choose a different pair of equations & eliminate the same variable.
 - Form a 2 x 2 system with the equations found in steps 2 & 3. Eliminate one of the variables from this 2 x 2 system using a linear combination.
 - Use back-substitution to solve.

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Examples

Solve the system:

1.
$$\begin{cases} -x - 5y + 2z = 2 \\ x + y + 2z = 2 \\ 3x + y - 4z = -10 \end{cases}$$

2.
$$\begin{cases} x - 2y + z = 1 \\ x + y + 2z = 2 \\ 2x + 3y + z = 6 \end{cases}$$

3.
$$\begin{cases} 2x - y + 2z = 6 \\ -x + y + z = 0 \\ -x - 3z = -6 \end{cases}$$

4.
$$\begin{cases} 2x + y + 3z = 4 \\ -3x - y - 4z = 5 \\ x + y + 2z = 0 \end{cases}$$
