Systems of linear equations in 3 variables: \( Ax + By + Cz = 0 \)

Show that \((-1, -4, 5)\) is a solution

\[
\begin{align*}
x - 2y + 3z &= 22 \\
2x - 3y - z &= 5 \\
3x + y - 5z &= -32
\end{align*}
\]

1. Reduce the system to two equations in two variables. (get rid of \(x\) terms)

2. Use the two equations and solve as in 5.1

3. Back-substitute the variable found in 2

4. Continue to subs. and check w/ original

\[
\begin{align*}
x + 4y - z &= 20 \\
3x + 2y + z &= 8 \\
2x - 3y + 2z &= -16
\end{align*}
\]