Quiz # 2
Time: 10 minutes

Show all work. Check your answers.
Solve the following system of equations:

\[
\begin{align*}
\text{0:} & \quad x + 2y + z = 2 \\
\text{1:} & \quad 2x - 2y + z = 5 \\
\text{2:} & \quad 3x - 4y - 2z = 1
\end{align*}
\]

We proceed by Left-to-Right Elimination:

Step 1: Replace line 2 by 2 \times 0: -6y - z = 1

Replace line 3 by 3 \times 0: -10y - 5z = -5

or better: \(2y + z = 1\)

The system becomes:

\[
\begin{align*}
\text{0:} & \quad x + 2y + z = 2 \\
\text{1:} & \quad -6y - z = 1 \\
\text{2:} & \quad 2y + z = 1
\end{align*}
\]

Step 2: Replace line 3 by \(\frac{1}{3} \times 2\): \(\frac{2}{3} z = \frac{4}{3} \rightarrow z = 2\)

Then back-substitute \(\frac{2}{3} - 6y - z = 1 \rightarrow y = -\frac{1}{2}\)

\(x + 2y + z = 2 \rightarrow x = 1\)

Then check these values by plugging them into the original 3 equations.