1) Is \((-4, 2, -1)\) a Solution of
\[
\begin{align*}
3x - y + z &= -15 \checkmark \\
x + 2y - z &= 1 \checkmark \\
2x + 3y - 2z &= 4 \times
\end{align*}
\]
Eqn 1:
\[
\begin{align*}
3(-4) - 2 - 1 &= -15 \\
-12 - 2 - 1 &= -15 \\
-15 &= -15 \checkmark
\end{align*}
\]
Eqn 2:
\[
\begin{align*}
-4 + 2(2) - (-1) &= 1 \\
-4 + 4 + 1 &= 1 \\
1 &= 1 \checkmark
\end{align*}
\]
Eqn 3:
\[
\begin{align*}
2(-4) + 3(2) - 2(-1) &= 4 \\
-8 + 6 + 2 &= 4 \\
0 &= 4 \text{ False}
\end{align*}
\]
So \((-4, 2, -1)\) is not a Solution.
Solve \[ \begin{cases} 3x + 2y - z = 0 \\ x - y + 5z = 2 \\ 2x + 3y + 3z = 7 \end{cases} \]

\[ \begin{align*}
5x + 9z &= 0 \\
5x + 18z &= 13
\end{align*} \]

\[ \begin{align*}
9z &= 9 \\
\therefore z &= 1
\end{align*} \]

\[ \begin{align*}
3x + 2y - z &= 0 \\
3(-1) + 2y - 1 &= 0 \\
-3 + 2y - 1 &= 0 \\
2y &= 4 \\
y &= 2
\end{align*} \]

Final Ans \((-1, 2, 1)\)

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Solve \[ \begin{cases} x - 5y - 2z = 6 \\ -2x + 10y + 4z = -12 \\ \frac{1}{2}x - \frac{5}{2}y - z = 3 \end{cases} \]

Hint: Multiply eqn 3 by \(\text{LCD} = 2\) to clear fractions.

\[ \begin{align*}
x - 5y - 2z &= 6 \\
-2x + 10y + 4z &= -12 \\
x - 5y - 2z &= 6
\end{align*} \]

\[ \begin{align*}
\therefore O = 0 \quad \text{True}
\end{align*} \]
Solve:

\[ \begin{align*}
12 & \left\{ \frac{2}{3}x - \frac{1}{3}y + \frac{1}{3}z = 9 \\
6 & \left\{ \frac{1}{6}x + \frac{1}{3}y - \frac{1}{2}z = 2 \\
2 & \left\{ \frac{1}{2}x - y + z = 2 \\
\end{align*} \]

\[ \begin{align*}
9x - 4y + 6z &= 108 \\
x + 2y - 3z &= 12 \\
x - 2y + z &= 4 \\
\end{align*} \]

2 \[ \begin{align*}
x + 2y - 3z &= 12 \\
11x &= 132 \\
x &= \frac{132}{11} \\
\end{align*} \]

\[ \begin{align*}
x + 2y - 3z &= 12 \\
12 + 2y &= 3(4) = 12 \\
2y &= 0 \\
y &= 0
\end{align*} \]

\[ \begin{align*}
\text{Hint: Use LCD for each eqn, then clear all fractions.} \\
\end{align*} \]

\[ \begin{align*}
\end{align*} \]

\[ \begin{align*}
\left\{ \begin{array}{l}
x + 2y - 3z = 12 \\
x - 2y + z = 4 \\
\end{array} \right. \\
\end{align*} \]

\[ \begin{align*}
2x - 2z = 16 \\
\text{Divide by 2} \\
\end{align*} \]

\[ \begin{align*}
x - z &= 8 \\
12 - z &= 8 \\
12 - 8 &= z \\
4 &= z \\
\end{align*} \]

\[ \left( 12, 6, 4 \right) \]

---

Solve:

\[ \begin{align*}
\end{align*} \]

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

\[ \begin{align*}
7x + 3y &= 12 \\
14x + 6y &= 19
\end{align*} \]

\[ \begin{align*}
-2 \left\{ \begin{array}{l}
7x + 3y = 12 \\
14x + 6y = 19
\end{array} \right. \\
0 &= -5
\end{align*} \]

\[ \text{False} \]
The sum of two numbers is 83, their difference is 17. Find both numbers.

Let \( x \) and \( y \) be the numbers.

\[
\begin{align*}
    x + y &= 83 \\
    x - y &= 17
\end{align*}
\]

\[
2x = 100 \\
x = 50
\]

\[
y = 33
\]

The numbers are 50 and 33.

The sum of three numbers is 40.
One number is 5 more than a second number.
It is also twice the third number.

Find all three numbers.

Let \( x, y, z \) be the numbers.

\[
\begin{align*}
    x + y + z &= 40 \\
    x &= y + 5 \\
    x &= 2z
\end{align*}
\]

\[
\begin{align*}
    x + y + z &= 40 \\
    x - y &= 5 \\
    x - 2z &= 0
\end{align*}
\]

\[
2x + z = 45 \\
5x = 90 \\
(x = 18)
\]

\[
2(18) + z = 45 \\
36 + z = 45 \\
z = 9
\]

\[
18 - y = 5 \\
18 - 5 = y \\
y = 13
\]

\[
18, 13, \text{ and } 9
\]

The numbers are 18, 13, and 9.
Consider the drawing below. Find $x$, $y$, and $z$.

\[
\begin{align*}
\begin{cases}
2x + y + z &= 180 \\
2x + 5 + y &= 180 \\
x + 2x + z &= 180
\end{cases}
\end{align*}
\]

\[\begin{align*}
x + y + z &= 180 \\
2x + y &= 175 \\
2x + z &= 185
\end{align*}\]

\[\begin{align*}
x + 2x &= 185 \\
x + z &= 185 \\
2x &= 180
\end{align*}\]

\[\begin{align*}
x &= 60 \\
3x &= 180 \\
3x &= 180
\end{align*}\]

The interior angles are $55^\circ$, $60^\circ$, and $65^\circ$.

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There are three types of food available to feed pigs. Here is the nutritional content:

<table>
<thead>
<tr>
<th>Type</th>
<th>Prot.</th>
<th>Fat</th>
<th>Carb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type A</td>
<td>4</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Type B</td>
<td>6</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Type C</td>
<td>4</td>
<td>1</td>
<td>12</td>
</tr>
</tbody>
</table>

Wilbur, the pig, is on a special diet. Wilbur is allowed to have 30 g of Prot, 16 g of Fat, and 24 g of Carb. How do we do this? We have unlimited supply of these types.
Finish this problem at home, express your answer correctly, and turn it in tomorrow as a quiz.