


$$\begin{array}{rcl} 18 & 4x - 2y + 5z = 72 & \text{--- } R_1 \\ & 5x - 4y - 4z = 2 & \text{--- } R_2 \\ & x - y + 5z = 46 & \text{--- } R_3 \end{array}$$

 stands for something.

Need to get it to the form

$$\begin{array}{rcl} x - \text{cloud} y + \text{cloud} z & = & \text{cloud} \\ y + \text{cloud} z & = & \text{cloud} \\ z & = & \text{cloud} \end{array}$$

①  $-5R_3 + R_2 \rightarrow R_2$   
 $-5R_3 \Rightarrow -5x + 5y - 25z = -230$   
 $-5R_3 + R_2 \Rightarrow y - 29z = -228$

Equations now become.

$$\begin{array}{rcl} 4x - 2y + 5z = 72 & \text{--- } R_1 \\ 5x - 4y - 4z = 2 & \text{--- } R_2 \\ y - 29z = -228 & \text{--- } R_3 \end{array}$$

②  $-4R_2 + 5R_1 \rightarrow R_2$   
 $-4R_2 \Rightarrow -20x + 16y + 16z = -8$   
 $5R_1 \Rightarrow 20x - 10y + 25z = 360$   
 $-4R_2 + 5R_1 \Rightarrow 4y + 41z = 352$

Equations now become

$$\begin{array}{rcl} 4x - 2y + 5z = 72 & \text{--- } R_1 \\ 4y + 41z = 352 & \text{--- } R_2 \\ y - 29z = -228 & \text{--- } R_3 \end{array}$$

③  $-4R_3 + R_2 \rightarrow R_2$   
 $-4R_3 \Rightarrow -4y + 116z = 912$   
 $-4R_3 + R_2 \Rightarrow 157z = 1264$

Equations now become

$$\begin{array}{rcl} 4x - 2y + 5z = 72 & \text{--- } R_1 \\ 4y + 41z = 352 & \text{--- } R_2 \\ 157z = 1264 & \text{--- } R_3 \end{array}$$

④  $\frac{1}{4}R_1 \rightarrow R_1$   
 $\frac{1}{4}R_2 \rightarrow R_2$   
 $\frac{1}{157}R_3 \rightarrow R_3$

$$\begin{array}{l} x - \frac{1}{2}y + \frac{5}{4}z = 18 \\ y + \frac{41}{4}z = 88 \\ z = 8.05 \end{array}$$

$$\begin{array}{l} {}^{00}y = 88 - \frac{41}{4}(8.05) = 5.5 \\ {}^{00}x = 18 + \frac{1}{2}(5.5) - \frac{5}{4}(8.05) = 10.6875 \end{array}$$

$\begin{array}{l} x = 10.6875 \\ y = 5.5 \\ z = 8.05 \end{array}$