

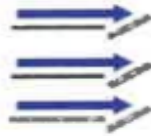


MATH 1030/1040

MATH 1030 – Systems of Equations – Section 3.5

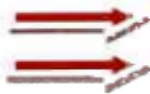
Eliminate "y"

$$\begin{aligned} 2x + 3y + z &= 17 \\ x - 3y + 2z &= -8 \\ 5x - 2y + 3z &= 5 \end{aligned}$$



$$\begin{aligned} 2x + 3y + z &= 17 \\ x - 3y + 2z &= -8 \\ \hline 3x + 3z &= 9 \end{aligned}$$

$$\begin{aligned} 2[2x + 3y + z &= 17] \\ 3[5x - 2y + 3z &= 5] \end{aligned}$$



$$\begin{aligned} 4x + 6y + 2z &= 34 \\ 15x - 6y + 9z &= 15 \\ \hline 19x + 11z &= 49 \end{aligned}$$

Take both highlighted equations and eliminate "z"

$$\begin{aligned} 11[3x + 3z &= 9] \\ -3[19x + 11z &= 49] \end{aligned}$$



$$\begin{aligned} 33x + 33z &= 99 \\ -57x - 33z &= -147 \\ \hline -24x &= -48 \\ -24 & \quad -24 \end{aligned}$$

$$x = 2$$

Plug "x" to highlighted equation

$$\begin{aligned} 3x + 3z &= 9 \\ 3(2) + 3z &= 9 \\ 6 + 3z &= 9 \\ -6 & \quad -6 \\ \hline 3z &= 3 \\ \frac{3z}{3} &= \frac{3}{3} \\ z &= 1 \end{aligned}$$

Plug "x" and "z" into original equation

$$\begin{aligned} 2x + 3y + z &= 17 \\ 2(2) + 3y + (1) &= 17 \\ 4 + 3y + 1 &= 17 \\ 5 + 3y &= 17 \\ -5 & \quad -5 \\ \hline 3y &= 12 \\ \frac{3y}{3} &= \frac{12}{3} \\ y &= 4 \end{aligned}$$

Solution (2, 4, 1)

Contact us via:

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