# Handout 4- Solving Systems in Three Variables

Solve the following linear systems algebraically.

1.
$$\begin{aligned} x + y + z &= 1 \\ 2x + y + 2z &= 2 \\ 3x + y + z &= 3 \end{aligned}$$

6.
$$\begin{aligned} 6x - 3y - 3z &= 6 \\ 2x - y - 2z &= 4 \\ 3x - 2y - z &= 6 \end{aligned}$$

2.
$$\begin{aligned} x + y &= 1 \\ 2x - 2y - z &= 1 \\ x - y - z &= -2 \end{aligned}$$

7.
$$\begin{aligned} -6x + 3y - 3z &= 3 \\ -2x - y - 2z &= 2 \\ -3x + 2y - z &= 3 \end{aligned}$$

3.
$$\begin{aligned} -x + y + z &= 3 \\ 3x - 2y - z &= 1 \\ x + y + z &= 1 \end{aligned}$$

8.
$$\begin{aligned} -6x + 3y + 2z &= 3 \\ -x + y &= 2 \\ x + 2y - z &= 1 \end{aligned}$$

4.
$$\begin{aligned} 2x + y + z &= 5 \\ x + 2y - z &= 4 \\ x + y + z &= 3 \end{aligned}$$

9.
$$\begin{aligned} 2x + y - 2z &= 2 \\ -x + y + 2z &= 2 \\ 2x + 2y - z &= 2 \end{aligned}$$

5.
$$\begin{aligned} 6x - 4y + 4z &= 6 \\ 2x + 2y + 4z &= 4 \\ 2x + 4z &= 6 \end{aligned}$$

10.
$$\begin{aligned} 6x + 3y - 3z &= 6 \\ -2x + 2y + z &= 1 \\ 4x + 4y - z &= 4 \end{aligned}$$