

More practice - Section 6.1

Use matrices (Gaussian Elimination) to solve each system of equations.

$$\text{a. } \begin{cases} x + y - z = 6 \\ 2x - y + z = -9 \\ x - 2y + 3z = 1 \end{cases}$$

$$\text{d. } \begin{cases} x - y + 2z + w = 4 \\ y + z = 3 \\ z - w = 2 \\ x - y = 0 \end{cases}$$

$$\text{b. } \begin{cases} -x + 2y + 6z = 2 \\ 3x + 2y + 6z = 6 \\ x + 4y - 3z = 1 \end{cases}$$

$$\text{e. } \begin{cases} 2x + y - z + 3w = 0 \\ 3x - 2y + z - 4w = -24 \\ x + y - z + w = 2 \\ x - y + 2z - 5w = -16 \end{cases}$$

$$\text{c. } \begin{cases} y = -2x - 2z + 1 \\ x = -2y - z + 2 \\ z = x - y \end{cases}$$

$$\text{f. } \begin{cases} x + 2y + z - 3w = 7 \\ y + z = 0 \\ x - w = 4 \\ -x + y = -3 \end{cases}$$

$$\text{g. } \begin{cases} x + y + z + w = 0 \\ x + y + 2z + 2w = 0 \\ 2x + 2y + 3z + 4w = 1 \\ 2x + 3y + 4z + 5w = 2 \end{cases}$$

$$\text{h. } \begin{cases} x + z + 2w = 6 \\ y - 2z = -3 \\ x + 2y - z = -2 \\ 2x + y + 3z - 2w = 0 \end{cases}$$

$$\text{i. } \begin{cases} 2x - 3y - z = 13 \\ -x + 2y - 5z = 6 \\ 5x - y - z = 49 \end{cases}$$

(Answers: a) $(-1, 23, 16)$; b) $\left(1, \frac{3}{10}, \frac{2}{5}\right)$; c) $\left(\frac{1}{2}, 1, -\frac{1}{2}\right)$; d) $(1, 1, 2, 0)$; e) $(-4, 3, -2, 1)$; f) $(2, -1, 1, -2)$; g) $(-1, 1, -1, 1)$; h) $(1, -1, 1, 2)$; i) $(10, 3, -2)$)