5. $x_1 + x_2 + 2x_3 = 8$
$-x_1 - 2x_2 + 3x_3 = 1$
$3x_1 - 7x_2 + 4x_3 = 10$

$$\left[\begin{array}{ccc|c} 1 & 1 & 2 & 8 \\ -1 & -2 & 3 & 1 \\ 3 & -7 & 4 & 10 \end{array}\right]$$

(i) $b_2 + b_1 \to b_2$ (ii) $b_3 - (3 \cdot b_1) \to b_3$

$$\left[\begin{array}{ccc|c} 1 & 1 & 2 & 8 \\ 0 & -1 & 5 & 9 \\ 3 & -7 & 4 & 10 \end{array}\right] \quad \left[\begin{array}{ccc|c} 1 & 1 & 2 & 8 \\ 0 & -1 & 5 & 9 \\ 0 & -10 & -2 & -14 \end{array}\right]$$

(iii) $b_3 - (10 \cdot b_2) \to b_3$

$$\left[\begin{array}{ccc|c} 1 & 1 & 2 & 8 \\ 0 & -1 & 5 & 9 \\ 0 & 0 & -52 & -104 \end{array}\right] \rightarrow \begin{array}{l} x_1 + x_2 + 2x_3 = 8 \\ -x_2 + 5x_3 = 9 \\ -52x_3 = -104 \end{array}$$

(iv) $-52x_3 = -104$
$x_3 = 2$ //

(v) $-x_2 + 5(2) = 9$
$x_2 = 1$ //

(vi) $x_1 + 1 + 2(2) = 8$
$x_1 = 3$ //

6. $2x_1 + 2x_2 + 2x_3 = 0$
$-2x_1 + 5x_2 + 2x_3 = 1$
$8x_1 + x_2 + 4x_3 = -1$

$$\left[\begin{array}{ccc|c} 2 & 2 & 2 & 0 \\ -2 & 5 & 2 & 1 \\ 8 & 1 & 4 & -1 \end{array}\right]$$

(i) $b_2 + b_1 \to b_2$ (ii) $b_3 - (4 \cdot b_1) \to b_3$

$$\left[\begin{array}{ccc|c} 2 & 2 & 2 & 0 \\ 0 & 7 & 4 & 1 \\ 8 & 1 & 4 & -1 \end{array}\right] \quad \left[\begin{array}{ccc|c} 2 & 2 & 2 & 0 \\ 0 & 7 & 4 & 1 \\ 0 & -7 & 4 & -1 \end{array}\right]$$

(iii) $b_3 + b_2 \to b_3$ (iv) $\left(b_2 \cdot -\frac{1}{4}\right) + b_1 \to b_1$

$$\left[\begin{array}{ccc|c} 2 & 2 & 2 & 0 \\ 0 & 7 & 4 & 1 \\ 0 & 0 & 0 & 0 \end{array}\right] \quad \left[\begin{array}{ccc|c} 1 & -\frac{3}{4} & 0 & -\frac{1}{4} \\ 0 & 7 & 4 & 1 \end{array}\right]$$

(v) $x_1 - \frac{3}{4}x_2 = -\frac{1}{4}$
$7x_2 + 4x_3 = 1$

(vi) $x_1 = -\frac{1}{4} + \frac{3}{4}x_2$ //
$x_3 = \frac{1}{4} - \frac{7}{4}x_2$ //
$x_2 = x_2$ atau tidak terdefinisi //

7. $x - y + 2z - w = -1$
$2x + y - 2z - 2w = -2$
$-x + 2y - 4z + w = 1$
$3x \quad\quad\quad - 3w = -3$

$$\left[\begin{array}{cccc|c} 1 & -1 & 2 & -1 & -1 \\ 2 & 1 & -2 & -2 & -2 \\ -1 & 2 & -4 & 1 & 1 \\ 3 & 0 & 0 & -3 & -3 \end{array}\right]$$

(i) $b_2 - (2 \cdot b_1) \to b_2$

$$\left[\begin{array}{cccc|c} 1 & -1 & 2 & -1 & -1 \\ 0 & 3 & -6 & 0 & 0 \\ -1 & 2 & -4 & 1 & 1 \\ 3 & 0 & 0 & -3 & -3 \end{array}\right]$$

(ii) $b_3 + b_1 \to b_3$

$$\left[\begin{array}{cccc|c} 1 & -1 & 2 & -1 & -1 \\ 0 & 3 & -6 & 0 & 0 \\ 0 & 1 & -2 & 0 & 0 \\ 3 & 0 & 0 & -3 & -3 \end{array}\right]$$

(iii) $b_4 - (3 \cdot b_1) \to b_4$

$$\left[\begin{array}{cccc|c} 1 & -1 & 2 & -1 & -1 \\ 0 & 3 & -6 & 0 & 0 \\ 0 & 1 & -2 & 0 & 0 \\ 0 & 3 & -6 & 0 & 0 \end{array}\right]$$

(iv) $\frac{b_2}{3} \to b_2$; $\frac{b_4}{3} \to b_4$

$$\left[\begin{array}{cccc|c} 1 & -1 & 2 & -1 & -1 \\ 0 & 1 & -2 & 0 & 0 \\ 0 & 1 & -2 & 0 & 0 \\ 0 & 1 & -2 & 0 & 0 \end{array}\right]$$

(v) $b_3 - b_2 \to b_3$; $b_4 - b_2 \to b_4$

$$\left[\begin{array}{cccc|c} 1 & -1 & 2 & -1 & -1 \\ 0 & 1 & -2 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \end{array}\right]$$

(vi) $x - y + 2z - w = -1$
$y - 2z = 0$

(vii) misal $z = a$ dan $w = b$, dimana a dan b adalah bilangan real, maka:
$x = b - 1$ // $z = a$ //
$y = 2a$ // $w = b$ //

8.

$$-2b + 3c = 1$$
$$3a + 6b - 3c = -2$$
$$6a + 6b + 3c = 5$$

$$\left[\begin{array}{ccc|c} 0 & -2 & 3 & 1 \\ 3 & 6 & -3 & -2 \\ 6 & 6 & 3 & 5 \end{array}\right]$$

(i) $b_1 \leftrightarrow b_2$

$$\left[\begin{array}{ccc|c} 3 & 6 & -3 & -2 \\ 0 & -2 & 3 & 1 \\ 6 & 6 & 3 & 5 \end{array}\right]$$

(ii) $b_3 - (2 . b_1) = b_3$

$$\left[\begin{array}{ccc|c} 3 & 6 & -3 & -2 \\ 0 & -2 & 3 & 1 \\ 0 & -6 & 9 & 9 \end{array}\right]$$

(iii) $b_3 - (3 . b_2) = b_3$

$$\left[\begin{array}{ccc|c} 3 & 6 & -3 & -2 \\ 0 & -2 & 3 & 1 \\ 0 & 0 & 0 & 6 \end{array}\right]$$

(iv) $3a + 6b - 3c = -2$
$-2b + 3c = 1$
$0 = 6$

(v) tidak ada penyelesaian atau $\emptyset$ //