

Frachaly Chieloke christopher

15/ENG01/0026

Chem. Engr

$$T_1 + T_2 - 2T_3 + T_4 + 3T_5 - T_6 = 4$$

$$2T_1 - T_2 + T_3 + 2T_4 + T_5 - 3T_6 = 20$$

$$T_1 + 3T_2 - 3T_3 - T_4 + 2T_5 + T_6 = -15$$

$$5T_1 + 2T_2 - T_3 - T_4 + 2T_5 + T_6 = -3$$

$$-3T_1 - T_2 + 2T_3 + 3T_4 + T_5 + 3T_6 = 16$$

$$4T_1 + 3T_2 + T_3 - 6T_4 - 3T_5 - 2T_6 = -27$$

$$\begin{bmatrix} 1 & 1 & -2 & 1 & 3 & -1 \\ 2 & -1 & 1 & 2 & 1 & 3 \\ 1 & 3 & -3 & -1 & 2 & 1 \\ 5 & 2 & -1 & -1 & 2 & 1 \\ -3 & -1 & 2 & 3 & 1 & 3 \\ 4 & 3 & 1 & -6 & -3 & -2 \end{bmatrix} \begin{bmatrix} T_1 \\ T_2 \\ T_3 \\ T_4 \\ T_5 \\ T_6 \end{bmatrix} = \begin{bmatrix} 4 \\ 20 \\ -15 \\ -3 \\ 16 \\ -27 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 1 & -2 & 1 & 3 & -1 \\ 2 - \frac{2}{1} \times 1 & -1 + \frac{2}{1} \times 1 & 1 - \frac{2}{1} \times (-2) & 2 - \frac{2}{1} \times 1 & 1 - \frac{2}{1} \times 3 & 3 - \frac{2}{1} \times (-1) \\ 1 - \frac{1}{1} \times 1 & 3 - \frac{1}{1} \times 1 & -3 - \frac{1}{1} \times (-2) & -1 - \frac{1}{1} \times 1 & 2 - \frac{1}{1} \times 3 & 1 - \frac{1}{1} \times (-1) \\ 5 - \frac{5}{1} \times 1 & 2 - \frac{5}{1} \times 1 & -1 - \frac{5}{1} \times (-2) & -1 - \frac{5}{1} \times 1 & 2 - \frac{5}{1} \times 3 & 1 - \frac{5}{1} \times (-1) \\ -3 + \frac{3}{1} \times 1 & -1 + \frac{3}{1} \times 1 & 2 + \frac{3}{1} \times (-2) & 3 + \frac{3}{1} \times 1 & 1 + \frac{3}{1} \times 3 & 3 + \frac{3}{1} \times (-1) \\ 4 - \frac{4}{1} \times 1 & 3 - \frac{4}{1} \times 1 & 1 - \frac{4}{1} \times (-2) & -6 - \frac{4}{1} \times 1 & -3 - \frac{4}{1} \times 3 & -2 - \frac{4}{1} \times (-1) \end{bmatrix} \begin{bmatrix} T_1 \\ T_2 \\ T_3 \\ T_4 \\ T_5 \\ T_6 \end{bmatrix} = \begin{bmatrix} 4 \\ 20 - \frac{2}{1} \times 4 \\ -15 - \frac{1}{1} \times 4 \\ -3 - \frac{5}{1} \times 4 \\ 16 - \frac{3}{1} \times 4 \\ -27 - \frac{4}{1} \times 4 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 1 & -2 & 1 & 3 & -1 \\ 0 & -3 & 5 & 0 & -5 & -1 \\ 0 & 2 & -1 & -2 & -1 & 2 \\ 0 & -3 & -9 & -6 & -13 & 6 \\ 0 & 2 & -3 & 6 & 6 & 0 \\ 0 & -1 & 9 & -10 & -15 & 2 \end{bmatrix} \times \begin{bmatrix} T_1 \\ T_2 \\ T_3 \\ T_4 \\ T_5 \\ T_6 \end{bmatrix} = \begin{bmatrix} 4 \\ 12 \\ -19 \\ -23 \\ 28 \\ -43 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 1 & -2 & 1 & 5 & -1 \\ 0 & -3 & 5 & 0 & -5 & -1 \\ 0 & 0 & 2.33 & -2 & -4.33 & 1.33 \\ 0 & 0 & 4 & -6 & -8 & 6 \\ 0 & 0 & -0.67 & 6 & 6.67 & -0.67 \\ 0 & 0 & 7.33 & -10 & -13.33 & 2.33 \end{bmatrix} \times \begin{bmatrix} T_1 \\ T_2 \\ T_3 \\ T_4 \\ T_5 \\ T_6 \end{bmatrix} = \begin{bmatrix} 4 \\ 12 \\ -11 \\ -35 \\ 36 \\ -47 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 1 & -2 & 1 & 3 & -1 \\ 0 & -3 & 5 & 0 & -5 & -1 \\ 0 & 0 & 2.33 & -2 & -4.33 & 1.33 \\ 0 & 0 & 0 & -2.57 & -0.57 & 4.71 \\ 0 & 0 & 0 & 5.43 & 5.43 & -0.29 \\ 0 & 0 & 0 & -3.71 & 0.29 & -1.85 \end{bmatrix} \times \begin{bmatrix} T_1 \\ T_2 \\ T_3 \\ T_4 \\ T_5 \\ T_6 \end{bmatrix} = \begin{bmatrix} 4 \\ 12 \\ -11 \\ -16.14 \\ 32.86 \\ -12.43 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 1 & -2 & 1 & 3 & -1 \\ 0 & -3 & 5 & 0 & -5 & -1 \\ 0 & 0 & 2.3 & -2 & -4.33 & 1.33 \\ 0 & 0 & 0 & -2.57 & -0.57 & 4.71 \\ 0 & 0 & 0 & 0 & 4.22 & 9.67 \\ 0 & 0 & 0 & 0 & 1.11 & -8.67 \end{bmatrix} \times \begin{bmatrix} T_1 \\ T_2 \\ T_3 \\ T_4 \\ T_5 \\ T_6 \end{bmatrix} = \begin{bmatrix} 4 \\ 12 \\ -11 \\ -16.14 \\ -1.22 \\ 16.89 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 1 & -2 & 1 & 3 & -1 \\ 0 & -3 & 5 & 0 & -5 & -1 \\ 0 & 0 & 2.3 & -2 & -4.33 & 1.33 \\ 0 & 0 & 0 & -2.57 & -0.57 & 4.71 \\ 0 & 0 & 0 & 0 & 4.22 & 9.67 \\ 0 & 0 & 0 & 0 & 0 & -18.21 \end{bmatrix} \times \begin{bmatrix} T_1 \\ T_2 \\ T_3 \\ T_4 \\ T_5 \\ T_6 \end{bmatrix} = \begin{bmatrix} 4 \\ 12 \\ -11 \\ -16.14 \\ -1.22 \\ 11.21 \end{bmatrix}$$

$$-11.21 T_6 = 11.21$$

$$T_6 = \frac{11.21}{-11.21} = -1$$

$$4.22 T_5 + 9.67 T_6 = -1.22$$

$$4.22 T_5 + 9.67(-1) = -1.22$$

$$4.22 T_5 - 9.67 = -1.22$$

$$4.22 T_5 = -1.22 + 9.67$$

$$T_5 = \frac{8.45}{4.22} = 2$$

$$-2.57 T_4 - 0.57 T_5 + 4.71 T_6 = -16.14$$

$$-2.57 T_4 - 0.57(2) + 4.71(-1) = -16.14$$

$$-2.57 T_4 + 1.14 - 4.71 = -16.14$$

$$-2.57 T_4 - 5.85 = -16.14$$

$$-2.57 T_4 = -16.14 + 5.85$$

$$-2.57 T_4 = -10.29$$

$$T_4 = \frac{-10.29}{-2.57} = 4$$



$$2 \cdot 3 T_3 - 2 T_4 - 4 \cdot 33 T_5 + 1 \cdot 33 T_6 = -11$$

$$2 \cdot 3 T_3 - 2(4) - 4 \cdot 33(2) + 1 \cdot 33(-1) = -11$$

$$2 \cdot 3 T_3 - 8 - 8.66 - 1.33 = -11$$

$$2 \cdot 3 T_3 - 17.99 = -11$$

$$2 \cdot 3 T_3 = -11 + 17.99$$

$$2 \cdot 3 T_3 = 6.99$$

$$T_3 = \frac{6.99}{2 \cdot 33}$$

$$T_3 = 3$$

$$3 T_2 + 5 T_3 - 5 T_5 - T_6 = 12$$

$$3 T_2 + 5(3) - 5(2) - T(-1) = 12$$

$$3 T_2 + 15 - 10 + 1 = 12$$

$$3 T_2 + 6 = 12$$

$$3 T_2 = 12 - 6$$

$$3 T_2 = 6$$

$$T_2 = \frac{6}{3} = 2$$

$$T_1 + T_2 - 2 T_3 + T_4 + 3 T_5 + T_6 = 4$$

$$T_1 + 2 - 2(3) + 4 + 3(2) + 1 = 4$$

$$T_1 + 2 - 6 + 4 + 6 + 1 = 4$$

$$T_1 + 8 = 4$$

$$T_1 = -4$$

$$\therefore T_1 = 1$$

$$T_2 = -2$$

$$T_3 = 3$$

$$T_4 = 4$$

$$T_5 = 2$$

$$T_6 = -1$$