

Math Assignment

Signature

Assignment 3

17/ENUGU/097

Elect/Elect

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$$\bar{T}_1 + \bar{T}_2 - 2\bar{T}_3 + \bar{T}_4 + 3\bar{T}_5 - \bar{T}_6 = 4$$

$$2\bar{T}_1 - \bar{T}_2 + \bar{T}_3 + 2\bar{T}_4 + \bar{T}_5 - 3\bar{T}_6 = 20$$

$$\bar{T}_1 - 3\bar{T}_2 - 3\bar{T}_3 - \bar{T}_4 + 2\bar{T}_5 + \bar{T}_6 = -15$$

$$5\bar{T}_1 - 2\bar{T}_2 - \bar{T}_3 - \bar{T}_4 + 2\bar{T}_5 + \bar{T}_6 = -3$$

$$-3\bar{T}_1 - \bar{T}_2 + 2\bar{T}_3 + 3\bar{T}_4 + \bar{T}_5 + 3\bar{T}_6 = 16$$

$$4\bar{T}_1 + 3\bar{T}_2 + \bar{T}_3 - 6\bar{T}_4 - 3\bar{T}_5 - 2\bar{T}_6 = 27$$

$\begin{bmatrix} 1 & 1 & -2 & 1 & 2 & -1 \\ 2 & -1 & 1 & 2 & 1 & -3 \\ 1 & 3 & -3 & -1 & 2 & 1 \\ 5 & 2 & -1 & -1 & 2 & 1 \\ -3 & -1 & 2 & 3 & 1 & 3 \\ 4 & 3 & 1 & -6 & -3 & -2 \end{bmatrix}$	$\begin{bmatrix} \bar{T}_1 \\ \bar{T}_2 \\ \bar{T}_3 \\ \bar{T}_4 \\ \bar{T}_5 \\ \bar{T}_6 \end{bmatrix}$	$=$	$\begin{bmatrix} 4 \\ 20 \\ -15 \\ -3 \\ 16 \\ -27 \end{bmatrix}$
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$$f_1 = \frac{2}{1} = 2, \quad f_2 = \frac{1}{1} = 1, \quad f_3 = \frac{3}{1} = 3$$

$$f_4 = \frac{4}{1} = 4$$

1	1	-2	1	3	-1
$2-2(1)$	$-1-2(1)$	$1-2(-2)$	$2-2(1)$	$1-2(3)$	$-3-2(-1)$
$1-1(1)$	$3-1(1)$	$-3-1(-2)$	$-1-1(1)$	$2-1(3)$	$1-1(-1)$
$5-5(1)$	$2-5(1)$	$-1-5(-2)$	$-1-5(1)$	$2-5(3)$	$1-5(-1)$
$-3+3(1)$	$-1+3(1)$	$2+3(-2)$	$3+3(1)$	$1+3(3)$	$3+3(-1)$
$4-4(1)$	$3-4(1)$	$1-4(-2)$	$-6+4(1)$	$-3+4(3)$	$2+4(-1)$

	T_1	T_4
\times	T_2	$20-2(4)$
	T_3	$-16-1(4)$
	T_4	$-3-5(4)$
	T_5	$16+3(4)$
	T_6	$-27-4(4)$

1	1	-2	1	3	-1
0	-2	5	0	-5	-1
0	2	-1	-2	-1	2
0	-3	9	-6	-13	6
0	2	-4	6	10	0
0	-1	9	10	16	2
	T_1				4
	T_2				12
	T_3				-19
	T_4				-23
	T_5				28
	T_6				-43

$$P_1 = -2/3, P_2 = -3/-3, P_3 = -2/3, P_4 = -1/-3$$

1	1	-2	1	3	-1	\hat{T}_1	4
0	-3	5	0	-6	-1	\hat{T}_2	12
0	0	$\frac{7}{3}$	-2	$-\frac{13}{3}$	$\frac{4}{3}$	\hat{T}_3	-11
0	0	4	-6	-8	1	\hat{T}_4	-35
0	0	$\frac{2}{3}$	6	$\frac{20}{3}$	$-\frac{2}{3}$	\hat{T}_5	36
0	0	$\frac{22}{3}$	-10	$-\frac{46}{3}$	$\frac{2}{3}$	\hat{T}_6	-47

$$f_1 = \frac{4 \times 3}{7} = \frac{12}{7}, \quad f_2 = \frac{-2 \times 3}{3 \times 7} = -\frac{2}{7}$$

$$f_3 = \frac{22 \times 3}{3 \times 7} = \frac{22}{7}$$

1	1	-2	1	3	-1	\hat{T}_1	4
0	-3	5	0	-6	-1	\hat{T}_2	12
0	0	$\frac{7}{3}$	-2	$-\frac{13}{3}$	$\frac{4}{3}$	\hat{T}_3	-11
0	0	0	$-\frac{12}{7}$	$-\frac{4}{7}$	$\frac{33}{7}$	\hat{T}_4	$-\frac{113}{7}$
0	0	0	$-\frac{38}{7}$	$\frac{38}{7}$	$-\frac{2}{7}$	\hat{T}_5	$\frac{236}{7}$
0	0	0	$-\frac{26}{7}$	$\frac{2}{7}$	$-\frac{13}{7}$	\hat{T}_6	$-\frac{67}{7}$

$$f_1 = \frac{-33 \times 7}{7 \times 18} = -\frac{19}{9}$$

$$f_2 = \frac{126 \times 7}{7 \times 13} = \frac{13}{9}$$

$$\begin{bmatrix}
 1 & -2 & 1 & 3 & -1 \\
 0 & -3 & 5 & 0 & -5 & -1 \\
 0 & 0 & 7/3 & -2 & -13/3 & 4/3 \\
 0 & 0 & 0 & -3 & -4/7 & 33/7 \\
 0 & 0 & 0 & 0 & 38/9 & 29/3 \\
 0 & 0 & 0 & 0 & 10/9 & -26/3
 \end{bmatrix}
 \begin{bmatrix}
 \bar{T}_1 \\
 \bar{T}_2 \\
 \bar{T}_3 \\
 \bar{T}_4 \\
 \bar{T}_5 \\
 \bar{T}_6
 \end{bmatrix}
 =
 \begin{bmatrix}
 4 \\
 12 \\
 -11 \\
 -113/7 \\
 -11/9 \\
 98/9
 \end{bmatrix}$$

$$P_1 = 10 \times 9 / (9 \times 38 / 19) = 5$$

$$\begin{bmatrix}
 1 & -2 & 1 & 3 & -1 \\
 0 & -3 & 5 & 0 & -5 & -1 \\
 0 & 0 & 1/3 & -2 & -13/3 & 4/3 \\
 0 & 0 & 0 & -18/7 & -4/7 & 33/7 \\
 0 & 0 & 0 & 0 & 38/9 & 29/3 \\
 0 & 0 & 0 & 0 & 0 & -213/19
 \end{bmatrix}
 \begin{bmatrix}
 \bar{T}_1 \\
 \bar{T}_2 \\
 \bar{T}_3 \\
 \bar{T}_4 \\
 \bar{T}_5 \\
 \bar{T}_6
 \end{bmatrix}
 =
 \begin{bmatrix}
 4 \\
 12 \\
 -11 \\
 -133/7 \\
 -11/9 \\
 -13/19
 \end{bmatrix}$$

$$\bar{T}_6 = \frac{-213}{19} \quad \bar{T}_6 = \frac{213}{19} \quad \therefore \bar{T}_6 = \frac{213}{14} \times \frac{-19}{213} = -1$$

$$\bar{T}_5 = \frac{38}{9} \bar{T}_5 + \frac{29}{3} \bar{T}_6 = -11/9$$

$$\frac{38}{9} \bar{T}_5 + \frac{29}{3} (-1) = -11/9$$

$$\bar{T}_5 = \left[\frac{-11}{9} + \frac{29}{3} \right] \times \frac{9}{38} = 2$$

$$\bar{T}_4 \Rightarrow \frac{-18}{7} \bar{T}_4 - \frac{4}{3} \bar{T}_5 + \frac{23}{7} \bar{T}_6 = \frac{-113}{7}$$

$$\frac{-18}{7} \bar{T}_4 - \frac{4}{7} (2) + \frac{23}{7} (-1) = \frac{-113}{7}$$

$$\frac{-18}{7} \bar{T}_4 - \frac{8}{7} - \frac{23}{7} = \frac{-113}{7}$$

$$\therefore \bar{T}_4 = \left[\frac{-113}{7} + \frac{18}{7} + \frac{23}{7} \right] \times \frac{-7}{18} = 4$$

$$\bar{T}_3 \Rightarrow \frac{2}{3} \bar{T}_3 - 2 \bar{T}_4 - \frac{13}{3} \bar{T}_5 + \frac{4}{3} \bar{T}_6 = -11$$

$$\frac{2}{3} \bar{T}_3 - 2(4) - \frac{13}{3}(2) + \frac{4}{3}(-1) = -11$$

$$\therefore \bar{T}_3 = \left[\frac{-11 + 8 + 26}{3} + \frac{4}{3} \right] \times \frac{3}{2} = \frac{3}{2}$$

$$\bar{T}_2 \Rightarrow -3 \bar{T}_2 + 5 \bar{T}_3 + 0 \bar{T}_4 - 5 \bar{T}_5 - \bar{T}_6 = 12$$

$$-3 \bar{T}_2 + 5(3) - 5(2) - 1 = 12$$

$$\bar{T}_2 = \left[\frac{12 - 15 + 10 - 1}{3} \right] = -2$$

$$\bar{T}_1 \Rightarrow \bar{T}_1 + \bar{T}_2 - 2 \bar{T}_3 + \bar{T}_4 + 3 \bar{T}_5 - \bar{T}_6 = 4$$

$$\therefore \bar{T}_1 - 2 - 2(3) + 4 + 3(2) - 1 = 4$$

$$\therefore \bar{T}_1 = 4 + 2 + 6 - 4 - 6 - 1 = 1$$