

	A			T		B	
-5.14286	-1.14286	9.42857		T4		-48.4286	
0	8.44444	19.3333		T5		-3.66667	
0	2.22222	-17.33333		T6		32.66667	0.263158

A			T		B
8.44444		19.3333	T5		-3.66667
0		-22.4211	T6		33.63158

Substituting from T6 to find T5-T1

T1	1.5
T2	-3
T3	4.5
T4	6
T5	3
T6	-1.5

USING MATLAB TO SOLVE GAUSS-SIEDEL METHOD

```

commandwindow
clear
clc
A=[2 2 -4 2 6 -2; 4 -2 2 4 2 -6; 2 6 -6 -2 4 2; 10 4 -2 -2 4 2; -6 -2 4 6
2 6; 8 6 2 -12 -6 -4]
B=[12; 60; -45; -9; 48; -81]
T=inv(A)*B
    
```

T1

T2

T3

T4

T5

T6

USING MATLAB TO SOLVE GAUSS-SIEDEL METHOD

`commandwindow``clear``clc``A=[2 2 -4 2 6 -2; 4 -2 2 4 2 -6; 2 6 -6 -2 4 2; 10 4 -2 -2 4 2; -6 -2``2 6; 8 6 2 -12 -6 -4]``B=[12; 60; -45; -9; 48; -81]``T=inv(A)*B`

SOLUTION FROM MATLAB

`A= 2 2 -4 2 6 -2``4 -2 2 4 2 -6``2 6 -6 -2 4 2``10 4 -2 -2 4 2``-6 -2 4 6 2 6``8 6 2 -12 -6 -4`

B is equal to T is equal to

12 1.5000

60 -3.5000

-45 4.0000

-9 6.0000

48 3.0000

81 1.5000

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 DEPARTMENT: CHEMICAL ENGINEERING
 ENGINEERING MATHEMATIC ASSIGNMENT
 ENG 382 ASSIGNMENT 3

1a. Gauss-Siedel Method using Microsoft Excel

	A					T	B	
2	2	4	2	6	-2	T1	12	
0	-6	10	0	-10	-2	T2	36	
0	4	-2	-4	-2	4	T5	-57	-0.667
0	-6	18	-12	-26	12	T4	-69	1
0	4	-8	12	20	0	T5	84	-0.667
0	2	18	-20	-30	4	T6	-129	0.3333

	A					T	B	
-6	10	0	-10	-2	T2	36		
0	4.6667	-4	-8.6667	2.6667	T3	-33		
0	8	-12	-16	14	T4	-105	1.71428	
0	-1.3333	12	13.3333	1.3333	T5	108	-0.2857	
0	14.6667	-20	-26.667	4.6667	T6	-141	3.14285	

	A				T	B	
4.6667	-4	-8.6667	2.6667	T3	-33		
0	5.14286	-1.14286	9.42857	T4	-48.4286		
0	10.8571	10.8571	0.57143	T5	98.57143	2.11111	
0	-7.4285	0.57143	-3.7143	T6	-37.2857	1.44444	

3. MATRIX-INVERSE METHOD USING EXCEL

A							T		B
	2	2	-4	2	6	-2		12	12
	4	-2	2	4	2	-6		60	60
	2	6	-6	-2	4	2		-45	-45
	10	4	-2	-2	4	2		48	48
	-6	-2	4	6	2	6		-9	-9
	8	6	2	-12	-6	-4		81	81
A ⁻¹							T		B
	-0.1514	0.0775	0.0423	0.0986	-0.0528	-0.0493	T1		12
	-0.2746	0.2723	0.4061	-0.1080	0.1174	0.0540	T2		60
	0.1655	-0.0188	-0.1315	-0.0012	0.1643	0.1256	T3		-45
	-0.4577	0.3427	0.3991	-0.0411	0.0012	-0.1045	T4		48
	0.5458	-0.2676	-0.3732	0.0458	0.0915	0.1021	T5		-9
	-0.0775	-0.0728	-0.0094	0.0892	0.0117	-0.0446	T6		81

CODE FOR A⁻¹ CELL= =MINVERSE(C4:H9)

CODE FOR B CELL= =MMULT(C12:H17,N4:N9)

4. MATRIX-INVERSE METHOD USING MATLAB

- commandwindow
- clear
- clc
- A=[2 2 -4 2 6 -2;4 -2 2 4 2 -6;2 6 -6 -2 4 2;10 4 -2 -2 4 2;-6 -2 4 6 2 6;8 6 2 -12 -6 -4]
- B=[12;60;-45;-9;48;-81]
- AI=inv(A)
- T=inv(AI)*B

MATLAB SOLUTION

A =

```

2 2 -4 2 6 -2
4 -2 2 4 2 -6
2 6 -6 -2 4 2
10 4 -2 -2 4 2
-6 -2 4 6 2 6
8 6 2 -12 -6 -4
    
```

B =

```

12
60
-45
-9
48
-81
    
```

AI =

```

-0.1514 0.0775 0.0423 0.0986 -0.0528 -0.0493
-0.2746 0.2723 0.4061 -0.1080 0.1174 0.0540
0.1655 -0.0188 -0.1315 -0.0012 0.1643 0.1256
-0.4577 0.3427 0.3991 -0.0411 0.0012 -0.1045
0.5458 -0.2676 -0.3732 0.0458 0.0915 0.1021
-0.0775 -0.0728 -0.0094 0.0892 0.0117 -0.0446
    
```