

BULLEM, FLORENCE ILUEH-OCHUWEH
16/ENG01/005
CHEMICAL ENGINEERING
ASSIGNMENT 3

```
commandwindow
clear
clc
format short g
syms T T1 T2 T3 T4 T5 T6
A = [ 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]
```

A =

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

```
X = [T1; T2; T3; T4; T5; T6]
B = [4; 20; -15; -3; 16; -27]
```

X =

T1

T2

T3

T4

T5

T6

B =

4
20
-15
-3
16
-27

Ainv = inv(A)
T = Ainv*B

Ainv =

-0.30282	0.15493	0.084507	0.19718	-0.10563	-0.098592
-0.5493	0.5446	0.81221	-0.21596	0.23474	0.10798
0.33099	-0.037559	-0.26291	-0.0023474	0.32864	0.25117
-0.91549	0.68545	0.79812	-0.08216	0.0023474	-0.20892
1.0915	-0.53521	-0.74648	0.091549	0.1831	0.20423
-0.15493	-0.14554	-0.018779	0.1784	0.023474	-0.089202

T =

1
-2
3
4
2
-1

F21 = A(2,1)/A(1,1)
F31 = A(3,1)/A(1,1)
F41 = A(4,1)/A(1,1)
F51 = A(5,1)/A(1,1)
F61 = A(6,1)/A(1,1)

A = [A(1,1) A(1,2) A(1,3) A(1,4) A(1,5) A(1,6)
A(2,1)-(F21*A(1,1)) A(2,2)-(F21*A(1,2)) A(2,3)-(F21*A(1,3)) A(2,4)-
(F21*A(1,4)) A(2,5)-(F21*A(1,5)) A(2,6)-(F21*A(1,6))
A(3,1)-(F31*A(1,1)) A(3,2)-(F31*A(1,2)) A(3,3)-(F31*A(1,3)) A(3,4)-
(F31*A(1,4)) A(3,5)-(F31*A(1,5)) A(3,6)-(F31*A(1,6))

```

A(4,1)-(F41*A(1,1)) A(4,2)-(F41*A(1,2)) A(4,3)-(F41*A(1,3)) A(4,4)-(
(F41*A(1,4)) A(4,5)-(F41*A(1,5)) A(4,6)-(F41*A(1,6))
A(5,1)-(F51*A(1,1)) A(5,2)-(F51*A(1,2)) A(5,3)-(F51*A(1,3)) A(5,4)-(
(F51*A(1,4)) A(5,5)-(F51*A(1,5)) A(5,6)-(F51*A(1,6))
A(6,1)-(F61*A(1,1)) A(6,2)-(F61*A(1,2)) A(6,3)-(F61*A(1,3)) A(6,4)-(
(F61*A(1,4)) A(6,5)-(F61*A(1,5)) A(6,6)-(F61*A(1,6)) ]
B = [B(1,1); B(2,1)-(F21*B(1,1)); B(3,1)-(F31*B(1,1)); B(4,1)-(F41*B(1,1));
B(5,1)-(F51*B(1,1)); B(6,1)-(F61*B(1,1))]
F21 =

```

2

F31 =

1

F41 =

5

F51 =

-3

F61 =

4

A =

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	-4	6	10	0
0	-1	9	-10	-15	2

B =

4
12
-19
-23
28
-43

F32 = A(3,2)/A(2,2)
F42 = A(4,2)/A(2,2)
F52 = A(5,2)/A(2,2)
F62 = A(6,2)/A(2,2)

A = [A(1,1) A(1,2) A(1,3) A(1,4) A(1,5) A(1,6)
A(2,1) A(2,2) A(2,3) A(2,4) A(2,5) A(2,6)
A(3,1)-(F32*A(2,1)) A(3,2)-(F32*A(2,2)) A(3,3)-(F32*A(2,3)) A(3,4)-
(F32*A(2,4)) A(3,5)-(F32*A(2,5)) A(3,6)-(F32*A(2,6))
A(4,1)-(F42*A(2,1)) A(4,2)-(F42*A(2,2)) A(4,3)-(F42*A(2,3)) A(4,4)-
(F42*A(2,4)) A(4,5)-(F42*A(2,5)) A(4,6)-(F42*A(2,6))
A(5,1)-(F52*A(2,1)) A(5,2)-(F52*A(2,2)) A(5,3)-(F52*A(2,3)) A(5,4)-
(F52*A(2,4)) A(5,5)-(F52*A(2,5)) A(5,6)-(F52*A(2,6))
A(6,1)-(F62*A(2,1)) A(6,2)-(F62*A(2,2)) A(6,3)-(F62*A(2,3)) A(6,4)-
(F62*A(2,4)) A(6,5)-(F62*A(2,5)) A(6,6)-(F62*A(2,6))]
B = [B(1,1); B(2,1); B(3,1)-(F32*B(2,1)); B(4,1)-(F42*B(2,1)); B(5,1)-
(F52*B(2,1)); B(6,1)-(F62*B(2,1))]

F32 =

-0.66667

F42 =

1

F52 =

-0.66667

F62 =

0.33333

A =

1	1	-2	1	3	-1
0	-3	5	0	-5	-1
0	0	2.3333	-2	-4.3333	1.3333
0	0	4	-6	-8	7
0	0	-0.66667	6	6.6667	-0.66667
0	0	7.3333	-10	-13.333	2.3333

B =

4
12
-11
-35
36
-47

F43 = A(4,3)/A(3,3)

F53 = A(5,3)/A(3,3)

F63 = A(6,3)/A(3,3)

A = [A(1,1) A(1,2) A(1,3) A(1,4) A(1,5) A(1,6)
A(2,1) A(2,2) A(2,3) A(2,4) A(2,5) A(2,6)
A(3,1) A(3,2) A(3,3) A(3,4) A(3,5) A(3,6)
A(4,1)-(F43*A(3,1)) A(4,2)-(F43*A(3,2)) A(4,3)-(F43*A(3,3)) A(4,4)-
(F43*A(3,4)) A(4,5)-(F43*A(3,5)) A(4,6)-(F43*A(3,6))
A(5,1)-(F53*A(3,1)) A(5,2)-(F53*A(3,2)) A(5,3)-(F53*A(3,3)) A(5,4)-
(F53*A(3,4)) A(5,5)-(F53*A(3,5)) A(5,6)-(F53*A(3,6))
A(6,1)-(F63*A(3,1)) A(6,2)-(F63*A(3,2)) A(6,3)-(F63*A(3,3)) A(6,4)-
(F63*A(3,4)) A(6,5)-(F63*A(3,5)) A(6,6)-(F63*A(3,6))]
B = [B(1,1); B(2,1); B(3,1); B(4,1)-(F43*B(3,1)); B(5,1)-(F53*B(3,1));
B(6,1)-(F63*B(3,1))]

F43 =

1.7143

F53 =

-0.28571

F63 =

3.1429

A =

	1	1	-2	1	3	-
1	0	-3	5	0	-5	-
1	0	0	2.3333	-2	-4.3333	
1.3333	0	0	0	-2.5714	-0.57143	
4.7143	0	0	0	5.4286	5.4286	-
0.28571	0	0	0	-3.7143	0.28571	-
1.8571						

B =

4
12
-11
-16.143
32.857
-12.429

F54 = A(5,4)/A(4,4)

F64 = A(6,4)/A(4,4)

A = [A(1,1) A(1,2) A(1,3) A(1,4) A(1,5) A(1,6)
A(2,1) A(2,2) A(2,3) A(2,4) A(2,5) A(2,6)
A(3,1) A(3,2) A(3,3) A(3,4) A(3,5) A(3,6)
A(4,1) A(4,2) A(4,3) A(4,4) A(4,5) A(4,6)
A(5,1)-(F54*A(4,1)) A(5,2)-(F54*A(4,2)) A(5,3)-(F54*A(4,3)) A(5,4)-(F54*A(4,4)) A(5,5)-(F54*A(4,5)) A(5,6)-(F54*A(4,6))
A(6,1)-(F64*A(4,1)) A(6,2)-(F64*A(4,2)) A(6,3)-(F64*A(4,3)) A(6,4)-(F64*A(4,4)) A(6,5)-(F64*A(4,5)) A(6,6)-(F64*A(4,6))]
B = [B(1,1); B(2,1); B(3,1); B(4,1); B(5,1)-(F54*B(4,1)); B(6,1)-(F64*B(4,1))]
F54 =

-2.1111

F64 =

1.4444

A =

1	1	-2	1	3	-1
0	-3	5	0	-5	-1
0	0	2.3333	-2	-4.3333	1.3333
0	0	0	-2.5714	-0.57143	4.7143
0	0	0	0	4.2222	9.6667
0	0	0	0	1.1111	-8.6667

B =

4
12
-11
-16.143
-1.2222
10.889

F65 = A(6,5)/A(5,5)

A = [A(1,1) A(1,2) A(1,3) A(1,4) A(1,5) A(1,6)
A(2,1) A(2,2) A(2,3) A(2,4) A(2,5) A(2,6)
A(3,1) A(3,2) A(3,3) A(3,4) A(3,5) A(3,6)
A(4,1) A(4,2) A(4,3) A(4,4) A(4,5) A(4,6)
A(5,1) A(5,2) A(5,3) A(5,4) A(5,5) A(5,6)
A(6,1)-(F65*A(5,1)) A(6,2)-(F65*A(5,2)) A(6,3)-(F65*A(5,3)) A(6,4)-
(F65*A(5,4)) A(6,5)-(F65*A(5,5)) A(6,6)-(F65*A(5,6))]
B = [B(1,1); B(2,1); B(3,1); B(4,1); B(5,1); B(6,1)-(F65*B(5,1))]

F65 =

0.26316

A =

	1	1	-2	1	3	-
1	0	-3	5	0	-5	-
1	0	0	2.3333	-2	-4.3333	
1.3333	0	0	0	-2.5714	-0.57143	
4.7143	0	0	0	0	4.2222	
9.6667	0	0	0	0	0	-
11.211						

B =

4
12
-11
-16.143
-1.2222
11.211

T6 = B(6,1)/A(6,6);
T5 = (B(5,1) - (A(5,6)*T6))/A(5,5);
T4 = (B(4,1) - (A(4,6)*T6) - (A(4,5)*T5))/A(4,4);
T3 = (B(3,1) - (A(3,6)*T6) - (A(3,5)*T5) - (A(3,4)*T4))/A(3,3);
T2 = (B(2,1) - (A(2,6)*T6) - (A(2,5)*T5) - (A(2,4)*T4) - (A(2,3)*T3))/A(2,2);
T1 = (B(1,1) - (A(1,6)*T6) - (A(1,5)*T5) - (A(1,4)*T4) - (A(1,3)*T3) - (A(1,2)*T2))/A(1,1);

T1
T2
T3
T4
T5
T6
T1 =

1

T2 =

-2

T3 =

3

T4 =

4

T5 =

2

T6 =

-1