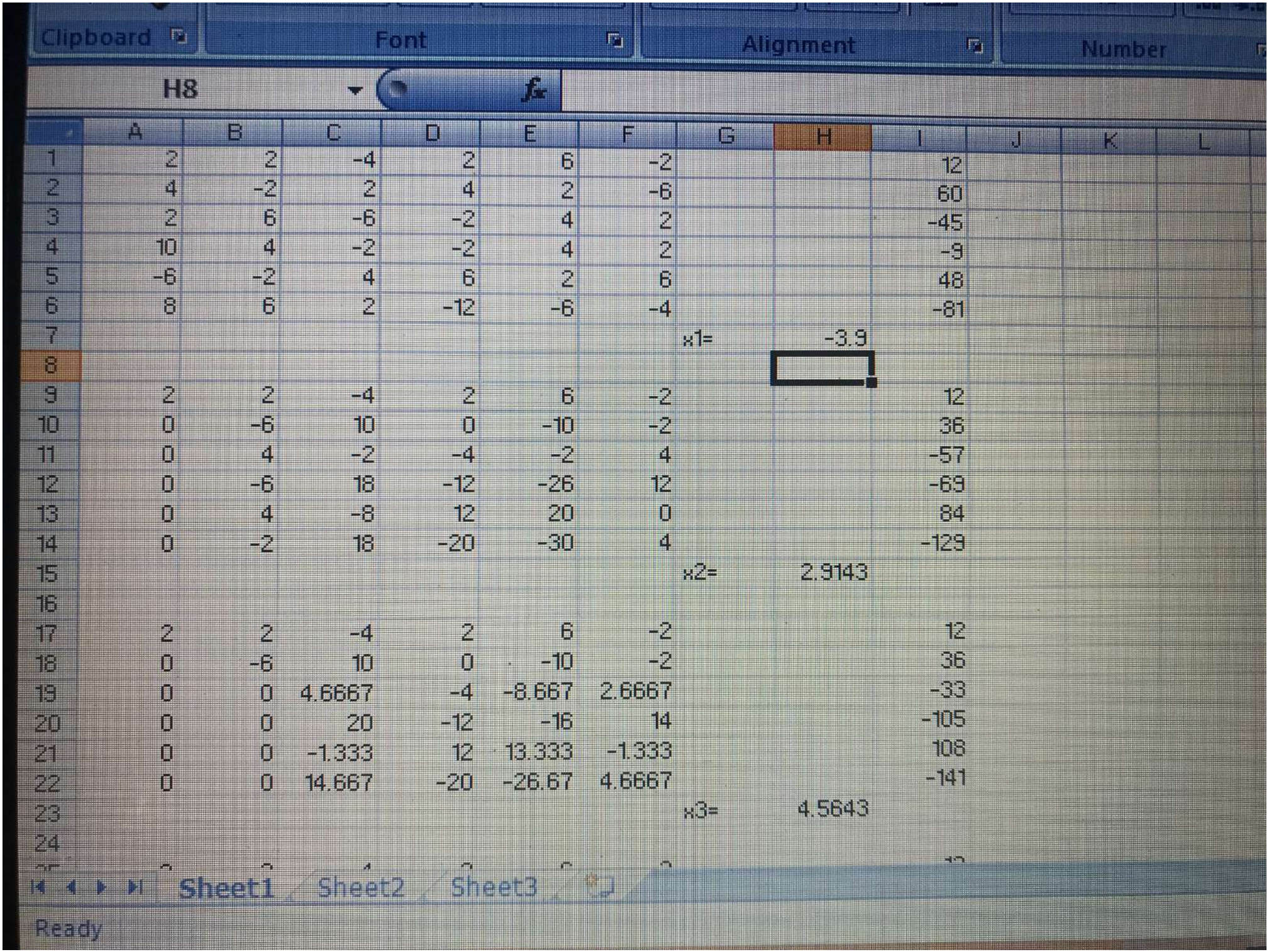

	A	B	C	D	E	F	G	H	I	J	K	L
1	2	2	-4	2	6	-2			12			
2	4	-2	2	4	2	-6			60			
3	2	6	-6	-2	4	2			-45			
4	10	4	-2	-2	4	2			-9			
5	-6	-2	4	6	2	6			48			
6	8	6	2	-12	-6	-4			-81			
7							x1=	-3.9				
8												
9	2	2	-4	2	6	-2			12			
10	0	-6	10	0	-10	-2			36			
11	0	4	-2	-4	-2	4			-57			
12	0	-6	18	-12	-26	12			-69			
13	0	4	-8	12	20	0			84			
14	0	-2	18	-20	-30	4			-129			
15							x2=	2.9143				
16												
17	2	2	-4	2	6	-2			12			
18	0	-6	10	0	-10	-2			36			
19	0	0	4.6667	-4	-8.667	2.6667			-33			
20	0	0	20	-12	-16	14			-105			
21	0	0	-1.333	12	13.333	-1.333			108			
22	0	0	14.667	-20	-26.67	4.6667			-141			
23							x3=	4.5643				
24												

H39 =(I37-F37*H47)/E37

	A	B	C	D	E	F	G	H	I	J	K
24											
25	2	2	-4	2	6	-2			12		
26	0	-6	10	0	-10	-2			36		
27	0	0	4.6667	-4	-8.667	2.6667			-33		
28	0	0	0	5.1429	21.143	2.5714			36.429		
29	0	0	0	10.857	10.857	-0.571			98.571		
30	0	0	0	-7.429	0.5714	-3.714			-37.29		
31							x4=	8.25			
32											
33	2	2	-4	2	6	-2			12		
34	0	-6	10	0	-10	-2			36		
35	0	0	4.6667	-4	-8.667	2.6667			-33		
36	0	0	0	5.1429	21.143	2.5714			36.429		
37	0	0	0	0	-33.78	-6			21.667		
38	0	0	0	0	31.111	-1E-14			15.333		
39							x5=	0.4929			
40											
41	2	2	-4	2	6	-2			12		
42	0	-6	10	0	-10	-2			36		
43	0	0	4.6667	-4	-8.667	2.6667			-33		
44	0	0	0	5.1429	21.143	2.5714			36.429		
45	0	0	0	0	-33.78	-6			21.667		
46	0	0	0	0	0	-5.526			35.289		
47							x6=	-6.386			

Sheet1 Sheet2 Sheet3

Ready

17/ENG03/037

b Gauss Elimination Method With MatCad

$$A := \begin{bmatrix} 2 & 2 & -4 & 2 & 6 & -2 \\ 4 & -2 & 2 & 4 & 2 & -6 \\ 2 & 6 & -6 & -2 & 4 & 2 \\ 10 & 4 & -2 & -2 & 4 & 2 \\ -6 & -2 & 4 & 6 & 2 & 6 \\ 8 & 6 & 2 & -12 & -6 & -4 \end{bmatrix} \qquad B := \begin{bmatrix} 12 \\ 60 \\ -45 \\ -9 \\ 48 \\ -81 \end{bmatrix}$$

$$A' := \begin{bmatrix} 2 & 2 & 2 & -4 & 2 & 6 & -2 \\ 0 & A_{2,2} - \left(\frac{A_{1,2}}{A_{1,1}}\right) \cdot A_{2,1} & & A_{3,2} - \left(\frac{A_{1,2}}{A_{1,1}}\right) \cdot A_{3,1} & & & \\ 0 & A_{2,3} - \left(\frac{A_{1,3}}{A_{1,1}}\right) \cdot A_{2,1} & & A_{3,3} - \left(\frac{A_{1,3}}{A_{1,1}}\right) \cdot A_{3,1} & & & \\ 0 & & & & & & \\ 0 & & & & & & \\ 0 & & & & & & \end{bmatrix}$$

$A' =$

$$B' := \begin{bmatrix} 12 \\ B_{1,2} - \left(\frac{A_{1,2}}{A_{1,1}}\right) \cdot B_{1,1} \\ B_{1,3} - \left(\frac{A_{1,3}}{A_{1,1}}\right) \cdot B_{1,1} \\ \\ \\ \\ \end{bmatrix}$$

$B' =$

$$B'' := \begin{bmatrix} 12 \\ 36 \\ B'_{1,3} - \left(\frac{A'_{2,3}}{A'_{2,2}}\right) \cdot B'_{1,2} \\ B'_{1,4} - \left(\frac{A'_{2,4}}{A'_{2,2}}\right) \cdot B'_{1,2} \\ \\ \\ \end{bmatrix}$$

$B'' =$

$$A'' := \begin{bmatrix} 2 & 2 & -4 & 2 & 6 & -2 \\ 0 & -6 & 10 & 0 & -10 & -2 \\ 0 & 0 & A'_{3,3} - \left(\frac{A'_{2,3}}{A'_{2,2}}\right) \cdot A'_{3,2} & A'_{4,3} - \left(\frac{A'_{2,3}}{A'_{2,2}}\right) \cdot A'_{4,2} & & \\ 0 & 0 & A'_{3,4} - \left(\frac{A'_{2,4}}{A'_{2,2}}\right) \cdot A'_{3,3} & A'_{4,4} - \left(\frac{A'_{2,4}}{A'_{2,2}}\right) \cdot A'_{4,2} & & \\ 0 & 0 & & & & \\ 0 & 0 & & & & \end{bmatrix}$$

$A'' =$

17|ENG03|037

$$A''' := \begin{bmatrix} 2 & 2 & -4 & 2 & 6 & -2 \\ 0 & -6 & 10 & 0 & -10 & -2 \\ 0 & 0 & 4.6667 & -4 & -8.667 & 2.6667 \\ 0 & 0 & 0 & A''_{4,4}-\left(\frac{A''_{3,4}}{A''_{3,3}}\right)\cdot A''_{4,3} & A''_{5,4}-\left(\frac{A''_{3,4}}{A''_{3,3}}\right)\cdot A''_{5,3} & \cdots \\ 0 & 0 & 0 & A''_{4,5}-\left(\frac{A''_{3,5}}{A''_{3,3}}\right)\cdot A''_{4,3} & A''_{5,5}-\left(\frac{A''_{3,5}}{A''_{3,3}}\right)\cdot A''_{5,3} & \cdots \\ 0 & 0 & 0 & \cdots & \cdots & \cdots \end{bmatrix}$$

$A''' =$

$$B''' := \begin{bmatrix} 12 \\ 36 \\ -33 \\ B''_{1,4}-\left(\frac{A''_{3,4}}{A''_{3,3}}\right)\cdot B''_{1,3} \\ B''_{1,5}-\left(\frac{A''_{3,5}}{A''_{3,3}}\right)\cdot B''_{1,3} \\ \cdots \end{bmatrix}$$

$B''' =$

$$A^4 := \begin{bmatrix} 2 & 2 & -4 & 2 & 6 & -2 \\ 0 & -6 & 10 & 0 & -10 & -2 \\ 0 & 0 & 4.6667 & -4 & -8.667 & 2.6667 \\ 0 & 0 & 0 & 5.1429 & 21.143 & 2.5714 \\ 0 & 0 & 0 & 0 & A'''_{5,5}-\left(\frac{A'''_{4,5}}{A'''_{4,3}}\right)\cdot A'''_{5,4} & A'''_{5,5}-\left(\frac{A'''_{4,5}}{A'''_{4,3}}\right)\cdot A'''_{6,4} \\ 0 & 0 & 0 & 0 & A'''_{6,6}-\left(\frac{A'''_{4,6}}{A'''_{4,4}}\right)\cdot A'''_{5,4} & A'''_{6,6}-\left(\frac{A'''_{4,6}}{A'''_{4,4}}\right)\cdot A'''_{6,5} \end{bmatrix}$$

$A^4 =$

$$B^4 := \begin{bmatrix} 12 \\ 36 \\ -33 \\ 36.429 \\ B'''_{1,5}-\left(\frac{A'''_{4,5}}{A'''_{4,3}}\right)\cdot B'''_{1,4} \\ B'''_{1,6}-\left(\frac{A'''_{4,6}}{A'''_{4,4}}\right)\cdot B'''_{1,4} \end{bmatrix}$$

$B^4 =$

$$A^5 := \begin{bmatrix} 2 & 2 & -4 & 2 & 6 & -2 \\ 0 & -6 & 10 & 0 & -10 & -2 \\ 0 & 0 & 4.6667 & -4 & -8.667 & 2.6667 \\ 0 & 0 & 0 & 5.1429 & 21.143 & 2.5714 \\ 0 & 0 & 0 & 0 & -33.78 & -6 \\ 0 & 0 & 0 & 0 & 0 & A^4_{6,6}-\left(\frac{A^4_{5,6}}{A^4_{5,5}}\right)\cdot A^4_{6,5} \end{bmatrix}$$

$A^5 =$

$$B^5 := \begin{bmatrix} 12 \\ 36 \\ -33 \\ 36.429 \\ 21.667 \\ B^4_{1,6}-\left(\frac{A^4_{5,6}}{A^4_{5,5}}\right)\cdot B^4_{1,5} \end{bmatrix}$$

$B^5 =$

$$T_6 := \frac{B^5_{1,6}}{A^5_{6,6}}$$

$T_6 =$

$$T_5 := \frac{B^5_{1,5}-\left(A^5_{5,6}\cdot T_6\right)}{A^5_{5,5}}$$

$T_5 =$

$$T_4 := \frac{B^5_{1,4}-\left(A^5_{5,4}\cdot T_5-A^5_{6,4}\cdot T_6\right)}{A^5_{4,4}}$$

$T_4 =$

$$T_3 := \frac{B^5_{1,3}-\left(A^5_{4,3}\cdot T_4-A^5_{5,3}\cdot T_5-A^5_{6,3}\cdot T_6\right)}{A^5_{3,3}}$$

$T_3 =$

	A	B	C	D	E	F	G	H	I	J	K	L
12	inverse matrix											
13	-0.1514	0.0775	0.0423	0.0986	-0.0528	-0.0493		12				
14	-0.2746	0.2723	0.4061	-0.108	0.1174	0.054		60				
15	0.1655	-0.0188	-0.1315	-0.0012	0.1643	0.1256		-45				
16	-0.4577	0.3427	0.3991	-0.0411	0.0012	-0.1045		-9				
17	0.5458	-0.2676	-0.3732	0.0458	0.0915	0.1021		48				
18	-0.0775	-0.0728	-0.0094	0.0892	0.0117	-0.0446		-81				
19												
20												
21	-0.1514	0.0775	0.0423	0.0986	-0.0528	-0.0493		12				
22	0	0.1318	0.3295	-0.2868	0.2132	0.1434		38.233				
23	0	0.0659	-0.0853	0.1066	0.1066	0.0717		-31.884				
24	0	0.1085	0.2713	-0.3391	0.1609	0.0446		-45.279				
25	0	0.0116	-0.2209	0.4012	-0.0988	-0.0756		91.256				
26	0	-0.1124	-0.031	0.0388	0.0388	-0.0194		-87.14				
27						t1		756				
28												
29		0.1318	0.3295	-0.2868	0.2132	0.1434		38.233				
30		0	-0.25	0.25	0	0		-51				
31		0	0	-0.1029	-0.0147	-0.0735		-76.765				
32		0	-0.25	0.4265	-0.1176	-0.0882		87.882				
33		0	0.25	-0.2059	0.2206	0.1029		-54.529				
34						t2		384				
35												
36			-0.25	0.25	0	0		-51				
37			0	-0.1029	-0.0147	-0.0735		-76.765				
38			0	0.1765	-0.1176	-0.0882		138.88				
39			0	0.0441	0.2206	0.1029		-105.53				
40						t3		702				
41												
42				-0.1029	-0.0147	-0.0735		-76.765				
43				0	-0.1429	-0.2143		7.2857				
44				0	0.2143	0.0714		-138.43				
45						t4		498				
46												
47					-0.1429	-0.2143		7.2857		t5	-816	
48					0	-0.25		-127.5				
49						t6		510				

c)

d)

$$A := \begin{pmatrix} 2 & 2 & -4 & 2 & 6 & -2 \\ 4 & -2 & 2 & 4 & 2 & -6 \\ 2 & 6 & -6 & -2 & 4 & 2 \\ 10 & 4 & -2 & -2 & 4 & 2 \\ -6 & -2 & 4 & 6 & 2 & 6 \\ 8 & 6 & 2 & -12 & -6 & -4 \end{pmatrix} \qquad B := \begin{pmatrix} 12 \\ 60 \\ -45 \\ -9 \\ 48 \\ -81 \end{pmatrix}$$

$$A^{-1} = \begin{pmatrix} -0.151 & 0.077 & 0.042 & 0.099 & -0.053 & -0.049 \\ -0.275 & 0.272 & 0.406 & -0.108 & 0.117 & 0.054 \\ 0.165 & -0.019 & -0.131 & -1.174 \times 10^{-3} & 0.164 & 0.126 \\ -0.458 & 0.343 & 0.399 & -0.041 & 1.174 \times 10^{-3} & -0.104 \\ 0.546 & -0.268 & -0.373 & 0.046 & 0.092 & 0.102 \\ -0.077 & -0.073 & -9.39 \times 10^{-3} & 0.089 & 0.012 & -0.045 \end{pmatrix}$$

$$A^{-1} \cdot T := B$$

$$Tbar := \left(A^{-1}\right)^{-1} \cdot B$$

$$Tbar = \begin{pmatrix} 756 \\ 384 \\ 702 \\ 498 \\ -816 \\ 510 \end{pmatrix}$$