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Matric: 17/ENG02/048

Department: Computer Engineering

Engineering maths assignment 3

a)

a	Α	В	С	D	Ε	F	G	н	1	J	K	L	М	N	0	P	Q	R	s
1	2	2	-4	2	6	-2		12											
2	4	-2	2	4	2			60											
3	2	6	-6	-2	4	2		-45				engineer	ring math	ematics a	ssignme	nt on gaus	s elimina	ition	
4	10	4	-2	-2	4	2		-9											
5	-6	-2	4	6	2	6		48				part A							
6	8	6	2	-12	-6	-4		-81											
7																			
8																			
9	2	2	-4	2	6	-2		12											
10	0	-6	10	0	-10			36											
11	0	7	-7	-4	3			-75											
12	0	-26	28	8	-16	-8		216											
13	0	0.4	2.8	4.8	4.4	7.2		42.6											
14	0	3.3333	7.3333	-4	-3.3333	4		-17			1								
15						tf		1.5											
16																			
17		-6	10	0	-10	-2		36											
18		0	4.6667	-4	-8.6667	2.6667		-33											
19		0	-15.333	8	27.333	0.6667		60											
20		0	3.4667	4.8	3.7333			45											
21		0	12.889	-4	-8.8889	2.8889		3											
22						t2		-3											
23																			
24			4.6667	-4	-8.6667	2.6667		-33											
25			0	-5.1429	-1.1429			-48.429											
26			0	7.7714	10.171	5.0857		69.514											
27			0	7.0476	15.048	-4.4762		94.143											
28						t3		4.5											
29																			
30				-5.1429	-1.1429			-48.429											
31				0				-3.6667											
32				0	13.481	8.4444		27.778											
33						t4		6											
34																			
35					8.4444			-3.6667		t5	3								
36					0	-22.421		33.632											
37						t6		-1.5											
38																			

b)

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

 $A \cdot T := B$

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

Tbar =
$$\begin{pmatrix} 1.5 \\ -3 \\ 4.5 \\ 6 \\ 3 \\ -1.5 \end{pmatrix}$$

		_		_	_		_					
d	. A	В	С	D	E	F	G	Н	- 1	J	K	L
12	inverse n											
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			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						tf		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				0020	-0.1429	-0.2143		7.2857				
44				Ö	0.2143			-138.43				
45					0.2.10	t4		498				
46						**		100				
47					-0.1429	-0.2143		7.2857		t5	-816	
48					-0.1423			-127.5			-010	
49						t6		510				
43								310				

d)

$$A := \begin{pmatrix} 2 & 2 & -4 & 2 & 6 & -2 \\ 4 & -2 & 2 & 4 & 2 & -6 \\ 2 & 6 & -6 & -2 & 4 & 2 \\ 10 & 4 & -2 & -2 & 4 & 2 \\ -6 & -2 & 4 & 6 & 2 & 6 \\ 8 & 6 & 2 & -12 & -6 & -4 \end{pmatrix}$$

$$B := \begin{pmatrix} 12 \\ 60 \\ -45 \\ -9 \\ 48 \\ -81 \end{pmatrix}$$

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

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

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

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