Chapter 7, Deformation of Trusses

Remarks: See § 7.3, pages 504 to 513

Answer

a)

Member	Forces(in terms of F)	$\Delta L (\text{mm})$
1	$\sqrt{5}$	$\sqrt{5}$
2	1	2
3	$\sqrt{5}/2$	$\sqrt{5}$
4	$\sqrt{5}/2$	$\sqrt{5}$
5	$-\sqrt{5}/2$	$-\sqrt{5}$
6	$\sqrt{5}/2$	$\sqrt{5}$
7	-0.5	-2
8	0.5	2

b)Assuming the direction of AG is fixed and removing the support at B:

Joint	$u_{x}(mm)$	u_y (mm)
A	0	0
В	12	12
C	-8	-0.5
D	-6	-0.5
E	0	-7
G	-2	0

c) The truss should be rotated $2 \cdot 10^{-3}$ radians anti-clockwise $(\frac{12 \cdot 10^{-3}}{6})$

Joint	$u_x(mm)$	u_y (mm)
A	0	0
В	-12	-12
C	-6	-9
D	-6	-3
Е	0	-12
G	0	-6

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d) Combined displacements:

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Joint	u_x (mm)	u_y (mm)		
A	0	0		
В	0	0		
C	-14	-9.5		
D	-12	-3.5		
E	0	-19		
G	-2	-6		

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