## **ANSWERS - VOLUME2: STRESSES, STRAINS, DISPLACEMENTS**

Chapter 7, Deformation of Trusses

problem 7.049, page 535

Remarks: See § 7.3, pages 504 to 513

## Answer

a)

u)		
Member	Sign	$\Delta L  (\text{mm})$
1	-	-4
2	0	0
3	-	$-2\sqrt{2}$
4	+	$ \begin{array}{c c} -2\sqrt{2} \\ 2\sqrt{2} \end{array} $
5	+	2
6	+	2
7	1	$-2$ $-2\sqrt{2}$
8	-	$-2\sqrt{2}$

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

Joint	$u_x$ (mm)	$u_y$ (mm)
A	0	0
В	0	-10
C	0	-14
D	4	-16
E	-2	-6
G	0	0

b) The truss should be rotated  $1.666 \cdot 10^{-3}$  radians clockwise ( $\frac{10 \cdot 10^{-3}}{6}$ )

Joint	$u_x$ (mm)	$u_y$ (mm)
A	0	0
В	0	10
C	10/3	20/3
D	0	20/3
Е	10/3	10/3
G	10/3	0

c) Combined displacements:

Joint	$u_x$ (mm)	$u_y$ (mm)
A	0	0
В	0	0
C	10/3	-22/3
D	4	-28/3
E	4/3	8/3
G	10/3	0

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