Chapter 9

Problem 5

Determine the horizontal displacement of joint B of the truss. Each member has a cross-sectional area of 400 mm$^2$. $E=200$ GPa. Use the method of virtual work.

Scan of Hand Written Calculations
Model with Applied Loads

Cross-sectional area of $4\text{cm}^2 = 400\text{mm}^2$
Similar to my picture results

Displacements: @1=-0.0100cm, @2=0cm, @3=-0.0267cm, @4=-0.0367cm
Displacement at B, point 4, is -0.0367cm, which equals -0.367mm.

**Results**

In my calculations, I found that the displacement at B is 0.3672mm. In the robot calculations, the displacement at B came to be -0.0367cm, which equals 0.367mm.