ANSWERS – VOLUME2: STRESSES, STRAINS, DISPLACEMENTS

Chapter 2, Bar Subject to Extension

problem 2.23, page 60

Remarks: See §2.2.1, pages 19 till 21

See §2.3, pages 24 till 26 See §2.6, pages 34 onwards

Answer:

Statement d is correct. A, B and C will be at the same height.

Explanation:

The weight of the triangular slab is supported by the wires A,B and C. Due to equilibrium (moment equilibrium about lines AB and AC as well as vertical equilibrium) it follows that the three wires are equally loaded.

$$N^{(AD)} = N^{(BE)} = N^{(CF)} = \frac{1}{3}G$$

The three wires are therefore lengthened equally $\Delta \ell = \frac{N\ell}{EA}$