

Element  
Test 3  
April 25  
Professor

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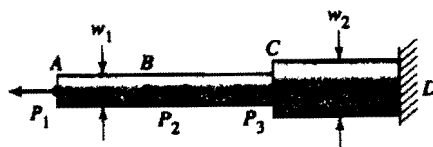
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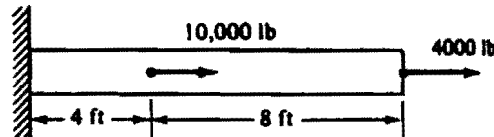
1.

- 19 Two square bars are welded together and loaded axially as shown. Determine the maximum normal stress in each bar if  $w_1 = 40$  mm,  $w_2 = 50$  mm,  $P_1 = 130$  kN,  $P_2 = 65$  kN, and  $P_3 = 260$  kN.



Prob. 10.19

2. A copper bar with a cross-sectional area of  $1.5 \text{ in}^2$  is loaded as shown. What is the total change in length of the bar?  $E_c = 16 \times 10^6$  psi.



3. A short square steel structural tube is used as a compression member as shown. The allowable compressive stress is 24,000 psi and the allowable axial deformation is 0.008 in. Determine the allowable load.  $E_s = 30 \times 10^6$  psi

