

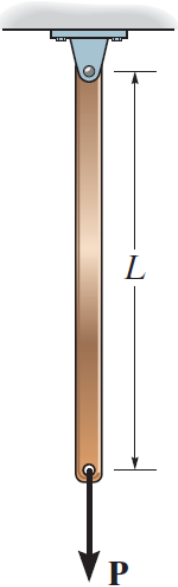
CME 260 – Mechanics of Materials
Exam #3 (02/23/2022)

Tech ID or Star ID: _____

Do one of the two problems shown below (the second problem is on the back).

Show your work (you will not receive any credit if all you have is a final answer, right or wrong).

1. The bar shown has a length L and cross-sectional area A . Determine the change in the length of the bar due to the force P and its own weight. The material has a specific weight γ (weight/volume) and a modulus of elasticity E . (your answer is to be given in terms of the variables provided).



2. The concrete column is reinforced with six steel reinforcing rods. Each reinforcing rod has a diameter of 20 mm. The column is subjected to a 900 kN axial force as shown. $E_{st} = 200$ GPa and $E_c = 25$ GPa. Determine:

- (a) The stress in the concrete.
- (b) The stress in the steel.

