力学与航空航天工程系
DEPARTMENT OF MECHANICS AND AEROSPACE ENGINEERING

Deadline: 23:00 of next Monday (2022/02/28)

MECHANICS OF MATERIALS

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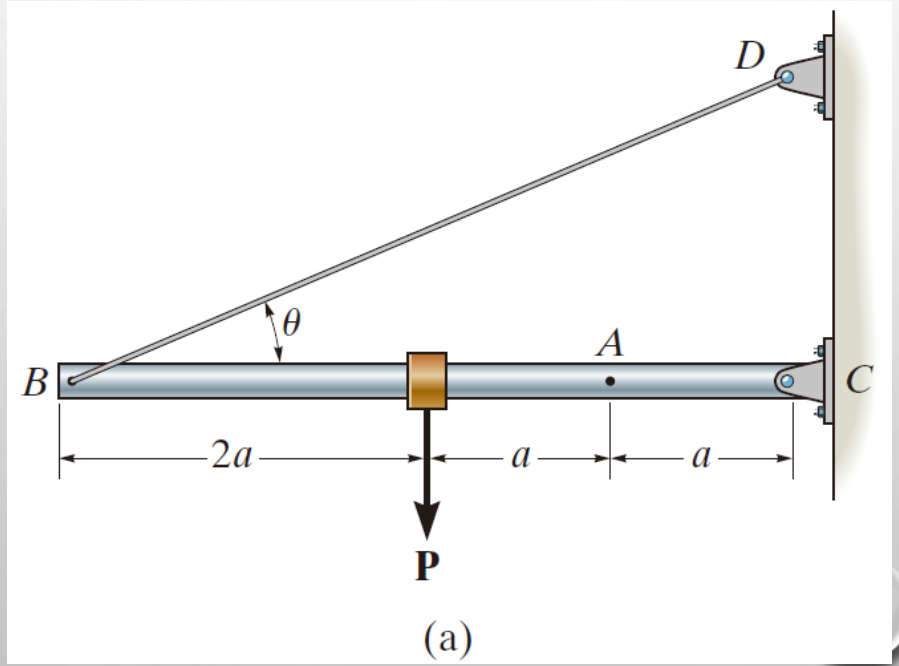
MAE202 SPRING 2022

Homework-I (6 problems)

Deadline: 23:00 of next Monday (2022/02/28)

Problem 1

P1–1. In each case, explain how to find the resultant internal loading acting on the cross section at point *A*. Draw all necessary free-body diagrams, and indicate the relevant equations of equilibrium. Do not calculate values. The lettered dimensions, angles, and loads are assumed to be known.

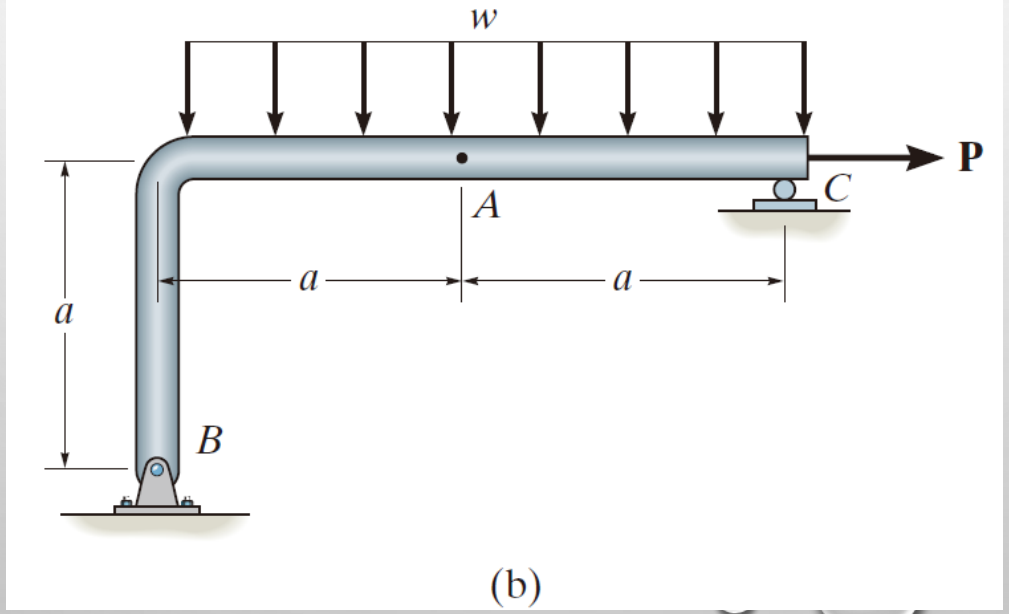


(a)

Homework-I (6 problems)

Problem 2

P1–1. In each case, explain how to find the resultant internal loading acting on the cross section at point *A*. Draw all necessary free-body diagrams, and indicate the relevant equations of equilibrium. Do not calculate values. The lettered dimensions, angles, and loads are assumed to be known.

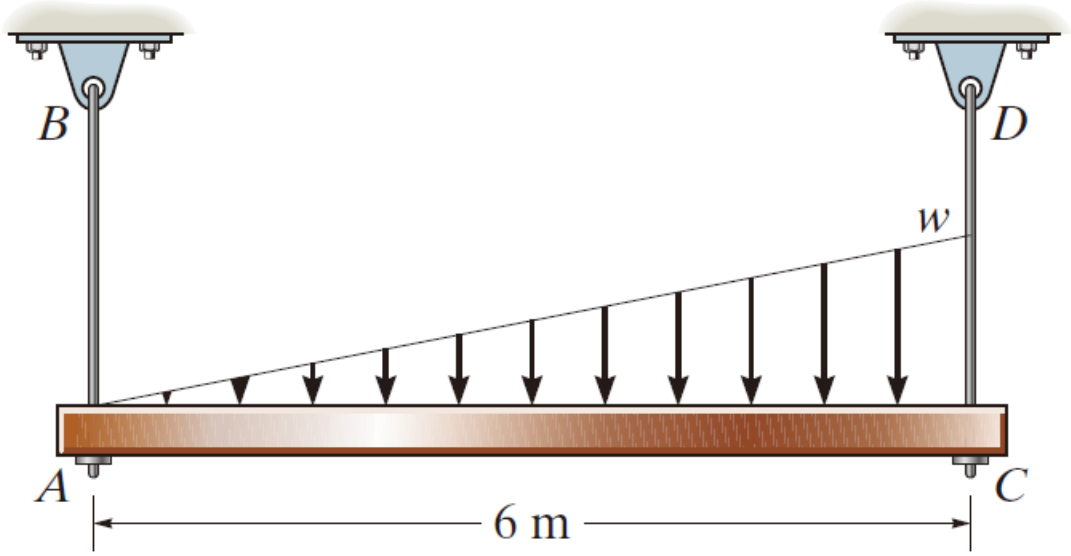


(b)

Homework-I (6 problems)

Problem 3

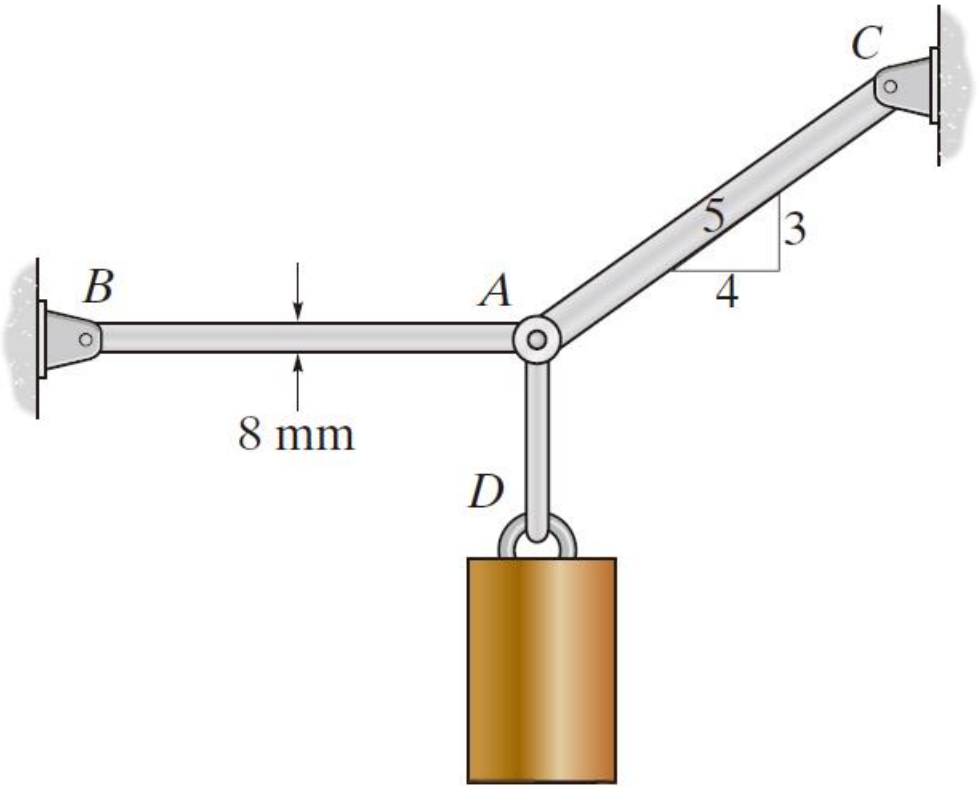
F1–7. The uniform beam is supported by two rods AB and CD that have cross-sectional areas of 10 mm^2 and 15 mm^2, respectively. Determine the intensity w of the distributed load so that the average normal stress in each rod does not exceed 300 kPa.



Homework-I (6 problems)

Problem 4

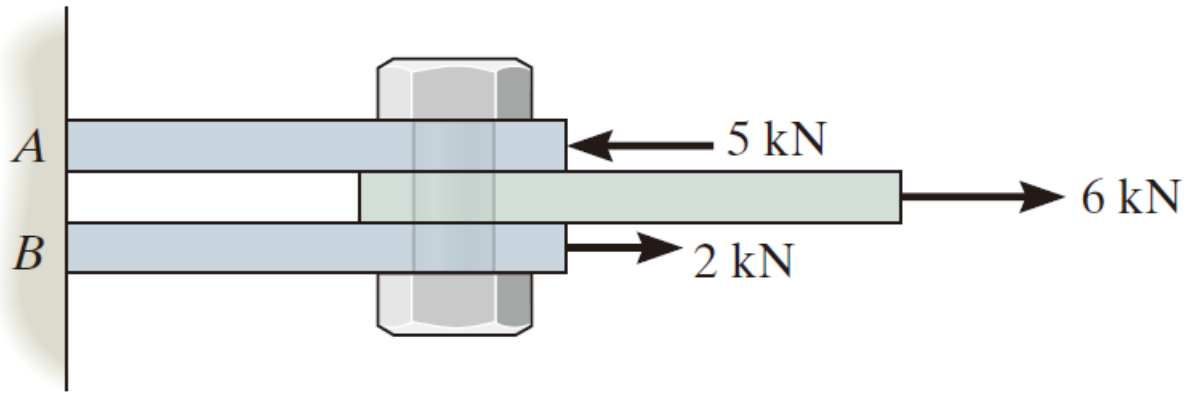
F1–12. Determine the average normal stress in rod AB if the load has a mass of 50 kg. The diameter of rod AB is 8 mm.



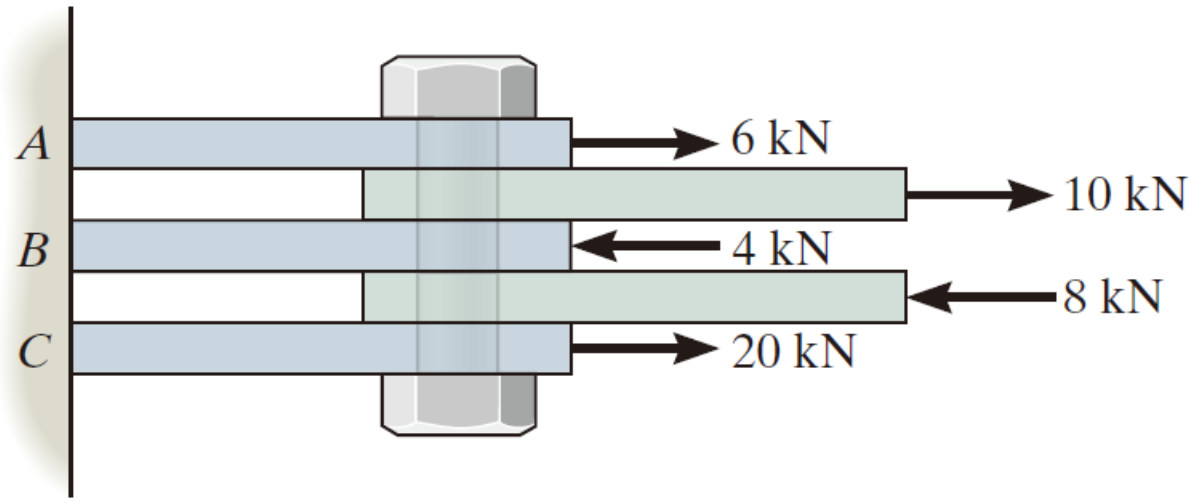
Homework-I (6 problems)

Problem 5

P1–2. In each case, determine the largest internal shear force resisted by the bolt. Include all necessary free-body diagrams.



(a)



(b)

Homework-I (6 problems)

Problem 6

P1–5. The lever is held to the fixed shaft using the pin AB. If the couple is applied to the lever, determine the shear force in the pin between the pin and the lever.