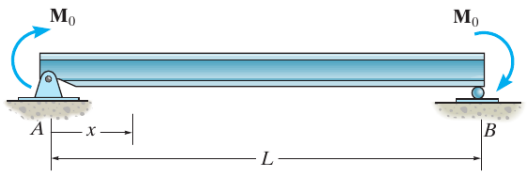
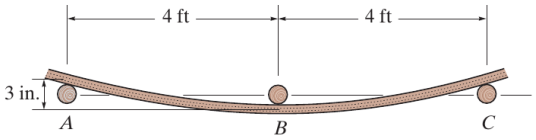
ENG104: Mechanics of Materials

ENG104, HW # 5, Due Wednesday 21May2025 by midnight, on canvas

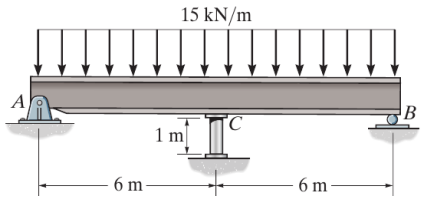
1. Determine the displacement at the center of the beam and the slope at B. EI is constant.



2. The fence board weaves between the three smooth fixed posts. If the posts remain along the same line, determine the maximum bending stress in the board. The board has a width of 6 in. and a thickness of 0.5 in. Assume the displacement of each end of the board relative to its center is 3 in. Take $E = 1.60(10^3)$ ksi.



3. The beam is supported by a pin at A, a roller at B, and a post having a diameter of 50 mm at C. Determine the support reactions at A, B, and C. The post and the beam are made of the same material having a modulus of elasticity $E = 200$ GPa, and the beam has a moment of inertia $I = 255(10^6)$ mm^4.



SOLUTION