



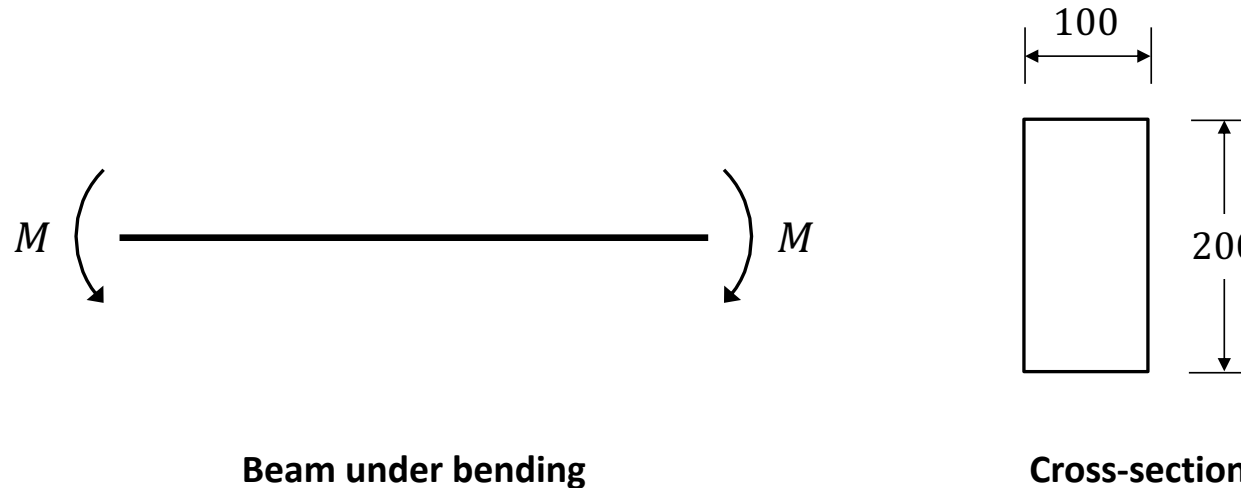
# Elastic-Plastic Deformations

## Worked Example 1

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## Rectangular Cross-Section Beam Subjected to a Pure Bending Moment

A rectangular section beam, 100 mm wide x 200 mm deep, as shown in the figure below, is made from an elastic-perfectly-plastic material with  $E = 200$  GPa and  $\sigma_y = 250$  MPa.



### Problem

Calculate the radius of curvature and the bending stress distribution when the pure moment,  $M = 190$  kNm is applied and after the moment is removed.



See video recording for solution