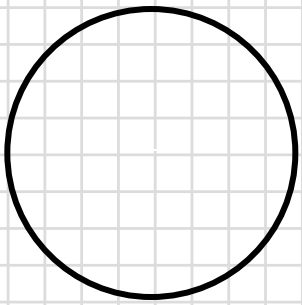
16-1

A steel rod of 1/8-in. diameter is bent into a loop of 10-ft diameter. Compute the maximum flexural stress in the rod.

Solution.



16-3

A 1/32-in.-thick steel blade is wrapped around a drum of 3-ft diameter. Compute the maximum flexural stress in the blade.

Solution.

16-4

A 0.08 in (2-mm) diameter copper wire is wound into a coil. Determine the minimum diameter of the coil that the wire can be wound around if the allowable flexural stress is 8700 psi (60 MPa).

16-5

A -1/16-in.-diameter steel wire is wound into a coil. Determine the minimum diameter of the coil if the allowable flexural stress is 24 ksi.

Solution.

16-7

A W16 x 36 steel section is used in a 30-ft simple span. Compute the maximum deflection due to a concentrated load of 12 kips at the midspan.

Solution.

16-8

Rework Problem 16-7. Assume that a uniform load of 0.4 kip/ft is applied to the entire span.

Solution.

16-12

A 4 x 10 rectangular Southern pine section is used in a 10-ft cantilever span. Compute the deflections at the quarter points due to a uniform load of 300 lb/ft.

Solution.

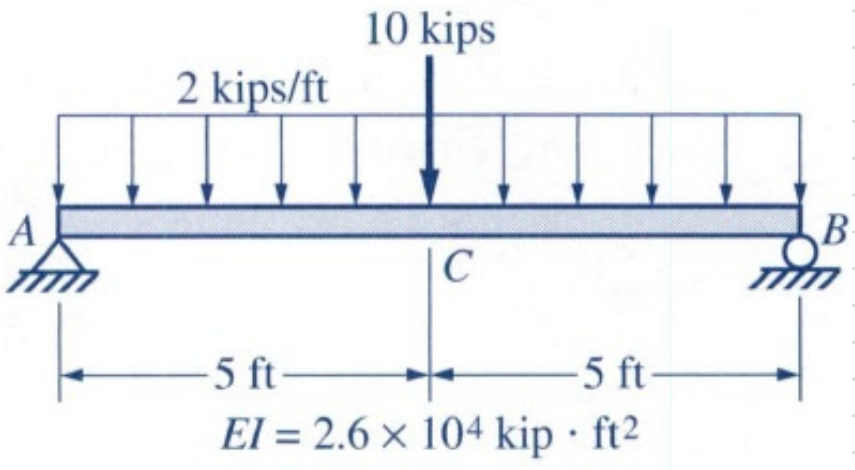
16-13

A W18 x 60 steel section is used in a 25-ft simple span. Determine the maximum allowable uniform load w that the beam can carry if the allowable flexural stress is 24 ksi, the allowable shear stress is 15 ksi, and the allowable deflection is 1/360 of the span length.

Solution.

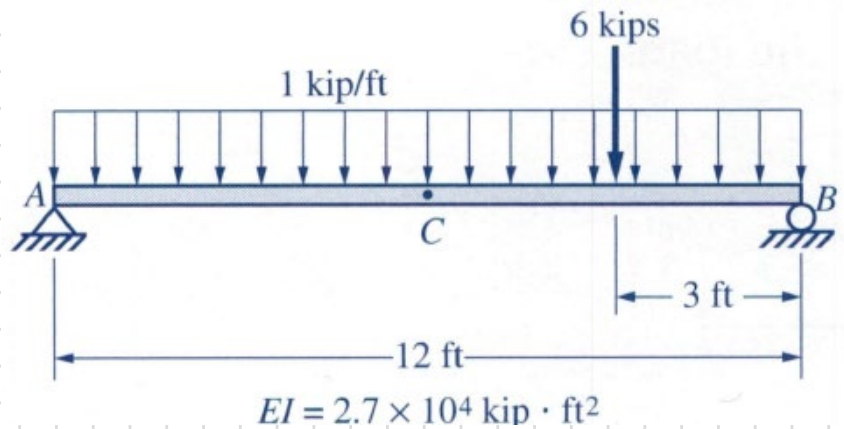
6-20 to 16-25 See Figs. P16-20 to P16-25. Determine the deflection at the midspan C of each simply supported beam subjected to the loads shown. The flexural rigidity of each beam is indicated.

16-21



6-20 to 16-25 See Figs. P16-20 to P16-25. Determine the deflection at the midspan C of each simply supported beam subjected to the loads shown. The flexural rigidity of each beam is indicated.

16-24



$EI = 2.7 \times 10^4$ kip · ft^2