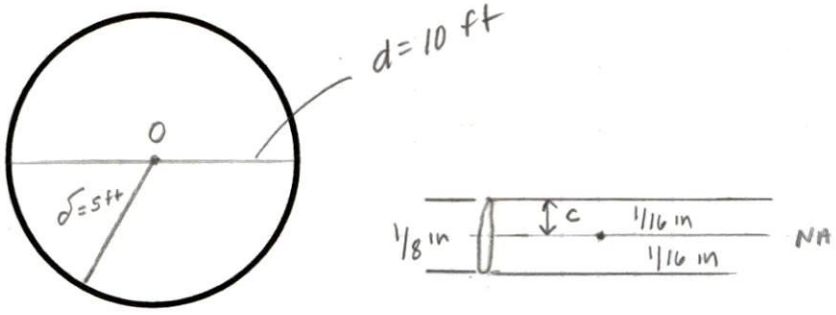
16-1

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.



$\rho = 5\text{ ft}$

$c = 1/16\text{ in}$

$E = 30 \times 10^3\ \text{ksi}$ (steel)

$$\sigma_{MAX} = \frac{Ec}{\rho} = \frac{30 \times 10^3\ \text{ksi}\,(1/16\text{ in})}{5\text{ ft}\,(\frac{12\text{ in}}{\text{ft}})}$$

$$= 31.25\ \text{ksi}$$