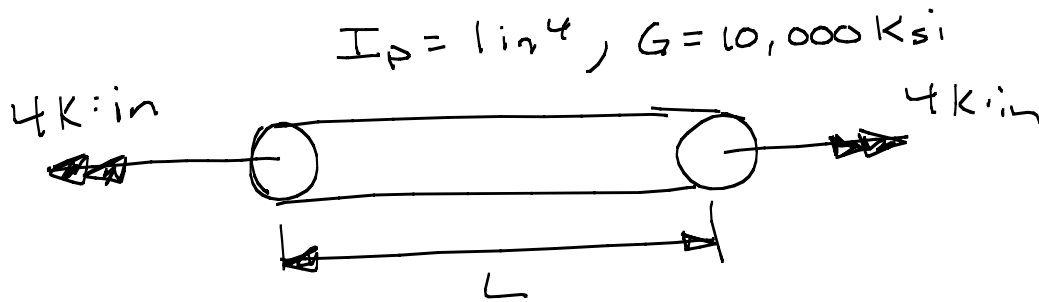


## Torsion

**Problem Statement:** Determine the longest length such that the total angle of twist does not exceed  $0.5^\circ$ .



1.) Determine the number of segments.

One segment

2.) Determine the internal force in each segment

$$T = 4 \text{ K.in}$$

3.) Determine the total angle of twist and other quantities

$$\phi = \frac{TL}{G I_P}$$
$$\left(0.5^\circ \times \frac{\pi \text{ radians}}{180^\circ}\right) = \frac{(4 \text{ K.in})(L)}{(10,000 \text{ Ksi})(1 \text{ in}^4)}$$

$$\boxed{L = 21.8 \text{ in}}$$