Exercise 1.1 An Introductory Exercise

Static Equilibrium of Node B

\[ F = \frac{P}{2 \sin \theta} \]
Static Equilibrium of Node C.

The first ensures equilibrium in the horizontal direction, the second, in the vertical direction.

\[ F \cdot \cos \theta - f_s = 0 \quad \text{and} \quad R - F \cdot \sin \theta = 0 \]

The first ensures equilibrium in the horizontal direction, the second, in the vertical direction.

**Force/Deformation of the spring:**

\[ f_s = k \cdot u \]
Compatibility of Deformation:

\[ u = L(\cos \theta - \cos \theta_0) \quad \text{and} \quad \Delta = L(\sin \theta_0 - \sin \theta) \]
\[ F = P/(2\sin\theta) \]

\[ F \cdot \cos\theta - f_s = 0 \]

\[ f_s = k \cdot u \]

\[ u = L(\cos\theta - \cos\theta_0) \quad \text{and} \quad \Delta = L(\sin\theta_0 - \sin\theta) \]

\[
\begin{align*}
(P/2kL) & = \sin\theta \cdot (1 - \cos\theta_0/\cos\theta) \\
\Delta/L & = \sin\theta_0 - \sin\theta
\end{align*}
\]