
Problem 1

A 40-kg inclined rectangular gate, smoothly hinged at Point A, is 1 m wide (dimension into the page) and 2 m long. It is held in place by a horizontal cable as shown in the diagram below. The reservoir on the left is filled with water ($\rho = 1000 \text{ kg/m}^3$). The right side of the gate is exposed to the atmosphere.

Find the force in the cable needed to keep the gate in place.

