Homework Problem 5.H

Given: A water gate is supported by a pin joint at A and a cable-pulley system at B. A counterweight C is attached to the end of the cable. The gate has a dimension into the page of *b*. The water has a density of ρ, and the weight of the gate is negligible compared to the weight of the water that it supports.

Find: Determine the weight of C required to hold the gate in equilibrium.

Leave your answer in terms of, at most: *d*, *b, g* and *ρ*.