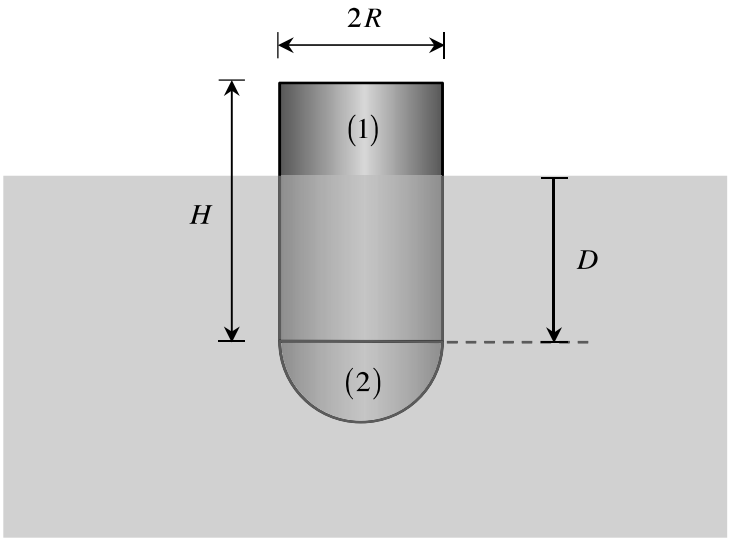
Homework H15.A

Given: A "float" is made up of cylinder (1) with a radius R and a length H, and a hemispherical cap of weight W and radius R. Assume that the weight of cylinder is negligible compared to the weight of the cap. The float is placed in water with a specific weight of ρg in the orientation shown.

Find: Determine the smallest length H for which the float does not sink.

Use the following parameter values in your work: R = 3 in, W = 15 lb and ρg = 62.4 lb/ft^3.



Homework H15.B

Given: A catamaran pontoon boat is made up a pair of hulls that are to be idealized as rectangular parallelpiped bodies with dimensions of ($t \times L \times H$), where L is the length of each hull (the dimension into the page in the figure shown below). The boat is to carry a heavy slab of material with a weight of W. The weight of the boat can be considered to be negligible as compared to the slab.

Find: Determine the minimum hull dimension t such that the draft of the boat, D, does not exceed D_{max}.

Use the following parameter values in your work: L = 14 ft, W = 1800 lb, D_{max} = 16 in and ρg = 62.4 lb/ft^3.