Problem 104B

A plate of mass 500 kg per meter width (normal to the sketch) is suspended at one end by a hinge as shown below. The bottom end of the plate is sealed but free to move. Calculate the angle of repose, θ, of the plate. The length of the plate is $2\ m$, the height of the hinge above the water level is $1\ m$ and the density of the water is $1000\ kg/m^3$.