Due 11:00 AM Mon 13 Nov 2000.

**PROBLEM 1: H&H 4.36, THE HYDRAULIC PRESS**

**PROBLEM 2: HOLLOW CONE**

**GIVEN**
A hollow steel cone with radius 1.00m and height of 2.00m has a pinhole at the top. The cone is filled with water.

**REQUIRED**
What is the minimum weight of the cone that will prevent the water from uplifting the cone and flowing out?

**PROBLEM 3: H&H 4.43, FLOATING BLOCK**
As stated in H&H, except the dimensions of the block are 1 m x sqrt(3) m x 4 m (into the page).

**PROBLEM 4: SLIDING FORCE ON A DAM**

**GIVEN**
A dam has the profile shown in the figure. The water is on the left side. The radius \( r = 3 \text{ m}, h = 1 \text{ m}, \theta = 80^\circ \), and the left face is tangent to the arc where they meet.

**REQUIRED**
Express the horizontal (sliding) force exerted by the water on the dam as a function the depth of the water, \( d \), per meter of length of the dam (length into the page).

**PROBLEM 4: H&H 5.11**

**PROBLEM 5: H&H 5.36**