

The updates, homework assignments, and useful links for APC can be found on SchoolNova's web page:
http://schoolnova.org/nova/classinfo?class_id=adv_phy_club&sem_id=ay2022
 The practical information about the club and contacts can be found on the same web page.

TODAY'S MEETING

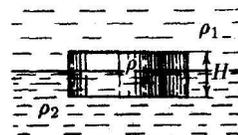
Today we almost finished the assignment on rotational motion. You will have more time to think about the star problem. The next topic is hydrostatics (Pascal's law and Archimedes principle).

REASSIGNED HOMEWORK

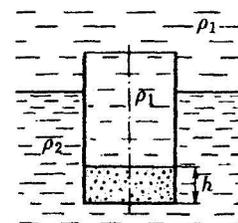
- *1. Consider two people fencing with uniform sticks. Which part of a stick should hit the other stick so that a fencer does not feel recoil? The fencer holds the stick by one of the ends with one hand.

NEW HOMEWORK

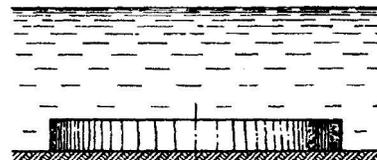
- 1. Some body placed in the water weighs 3 times less than it weighs in the air. What is that body's density?
- 2. A puck with density ρ floats at the interface of two liquids with densities $\rho_1 < \rho < \rho_2$. Height of the puck is H . Find what part (by height) of the puck is immersed in the lower liquid.



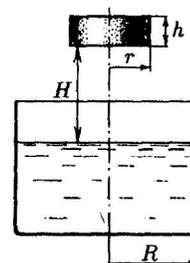
- 3. A thin-walled glass of mass m floats at the interface of two liquids with densities ρ_1 and ρ_2 such that $\rho_1 < \rho_2$. Find how deeply is the glass immersed in the lower liquid if glass's bottom has height h and area S and the glass is filled with the liquid of density ρ_1 .



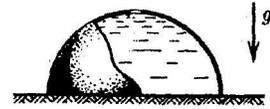
- 4. Communicating vessels of diameters d_1 and d_2 share some amount of liquid of density ρ in them. Find the change in the liquid level if one puts a body of mass m with density less than ρ in one of the vessels.
- 5. A wooden cylinder of radius 1 m and height 0.2 m is attached to the bottom of a tank of depth 1 m. After being released it goes up. What quantity of heat is released after the cylinder and the water stop moving? Wood density is $0.8 \cdot 10^3 \text{ kg/m}^3$



- 6. Cylindrical cork of radius r and height h falls into a cylindrical tank of radius R filled with water. Initial elevation of the cork above the surface of the water is H and its' initial speed is zero. What quantity of heat is released by the time cork and water stop moving? Density of cork is ρ , density of water is $\rho_0 > \rho$.



- *7. A thin-walled metal hemisphere with a little hole at the top rests on a table. Hemisphere's edges fit snugly against the table. Water is being poured inside through the hole and when it rises all the way to the hole, it lifts the hemisphere and starts flowing underneath it. Find the mass of the hemisphere if its' internal radius is R and density of water is ρ .



FOR THE NEXT MEETING

IMPORTANT: The next club's meeting is at 3:30pm, via Zoom, on Sunday, **March 5**.