

USEFUL RESOURCES

The updates, homework assignments, and useful links for APC can be found on SchoolNova's web page:  
[https://schoolnova.org/nova/classinfo?class\\_id=adv\\_phy\\_club&sem\\_id=ay2024](https://schoolnova.org/nova/classinfo?class_id=adv_phy_club&sem_id=ay2024)

The practical information about the club and contacts can be found on the same web page.

TODAY'S MEETING

We solved most of the assigned problems on gravity and orbital motion. Our next topic is hydrostatics: Paskal's and Archimedes laws.

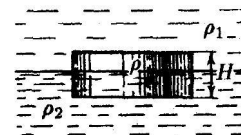
HOMEWORK

1. A piston with the longitudinal cross section shown on the figure is located inside a pipe with water. Water pressure is  $P$  on both sides of the pipe. Is the piston in equilibrium?



2. A block of ice floating in a bucket with fresh water is melted.
  - (a) How will the level of the water in the bucket change?
  - (b) How will the answer change if the water in the bucket is salted?
  - (c) What if the lead bullet is frozen into the ice?
  - (d) A piece of cork is frozen into the ice?
  - (e) The ice has an air bubble inside it?

3. A puck with density  $\rho$  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.



4. A vessel with water slides down an inclined plane. The plane makes angle  $\alpha$  with the horizon, friction coefficient between the vessel and the plane is  $\mu$ . What angle does the surface of the water in the vessel make with the horizon?

FOR THE NEXT MEETING

**IMPORTANT:** The next club's meeting is at 3:30pm, via Zoom, on Sunday, **February 23**.