ADVANCED PHYSICS CLUB

OCTOBER 6, 2024

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`

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

Today's meeting

Today we finished the problems on kinematics of uniform motion.

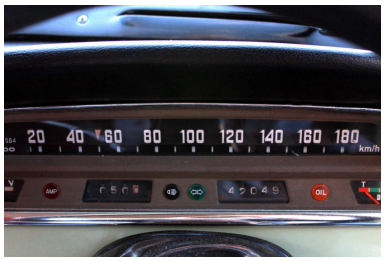
The next homework it to solve the remaining problems on motion with acceleration. **Please solve the problems at home!** It is most effective when during the club meeting we discuss the solutions that you already have.

If you feel like you need clarification about the formulation of any problem, you are always welcome to email apc@schoolnova.org

Homework

1. Upon entering an unpaved section of the road every car reduces its speed from v_1 to $v_2 < v_1$. The length of each car is l. What is the minimal distance between the cars that drivers should keep on the paved road to avoid collisions?

2. A speedometer of an old car has a linear scale, like the one shown on the figure. The speed scale is 25 cm long and displays speed from 0 to 180 km/h. Find speed of the speed-indicator arrow when the car is moving with acceleration 2 m/s^2.



3. A body starts moving from some point A. At first it moves with the constant acceleration for a time t_0. Then it suddenly changes the direction of acceleration to the opposite one (the magnitute remains the same). How long after leaving point A will the body return to the point A?

***4.** You are standing on a platform next to a train which is scheduled to depart at 12:00:00. It's exactly 12:00:00 by your watch and the second to last carriage already starts moving past you, and it goes past you completely in 10 s. Then the last carriage goes past you in 8 s. The train has departed on time and it is moving with a constant acceleration. How much does your watch fall behind?

For the next meeting

IMPORTANT: The next club's meeting is at 3:30pm, via Zoom, on Sunday, **October 20**.