

Order-of-Magnitude Physics – Problem Set 12

Due at the beginning of class.

Do any 1 of the problems + the last question (make up your own question).

You are free to do more if you like; answers will be graded.

“Study hard what interests you in the most undisciplined, irreverent and original manner possible.” — Richard Feynman

Problem 1. Sloshing

Water is poured into a flat-bottomed pan of height h and radius r . The water sloshes back and forth in the pan. Derive an approximate analytic formula for the time required for the water to settle down. Define carefully all variables used.

Problem 2. The Storm That Launched a Thousand Waves

Following a winter storm above the ocean, the interval between waves at California beaches declined from 17–19 s on Sunday, to 16–18s on Monday, and to 15–16s on Tuesday. Typical values are 10–11 s.

- (a) What was the maximum sustained wind speed during the storm?
- (b) How distant was the storm from the beaches?
- (c) How long ago did the storm take place?
- (d) What are upper limits on the size and duration of the storm?

Problem 3. Ask Your Own Question

Ask an OOM question of your own. You don't have to answer it.