

Homework No. 04B (Spring 2021)

PHYS 205A: University Physics

Due date: Friday, 2021 Feb 19, 11:55 AM, on D2L

Instructions

- Describe your thought process in detail and organize it clearly. Make sure your answer has the correct units and the right number of significant digits.
- After completion, scan the pages as a single PDF file, and submit the file on D2L (under Assesments → Assignments).

Problems

1. (**10 points.**) A boat is able to move through still water at 20.0 m/s . It makes a round trip to a town 3.0 km downstream. Assume all motion to be along a straight line. That is, the boat first travels in the direction of river and while returning travels against the direction of river. If the river flows at 5.0 m/s , determine the time required for this round trip.
2. (**10 points.**) A car travels due east with a speed of 40.0 km/h . Raindrops are falling at a constant speed vertically with respect to the ground. The traces of the rain on the side windows of the car make an angle of 76.0° with the vertical.
 - (a) Find the speed of the rain with respect to the ground.
 - (b) Find the speed of the rain with respect to the car.
3. (**10 points.**) The wind is flowing at a speed of 20 m/s in the direction 30° North of West with respect to the ground. Determine the direction and speed of the aeroplane should head (with respect to the wind) such that the aeroplane heads North (with respect to the ground) with speed 80.0 m/s .