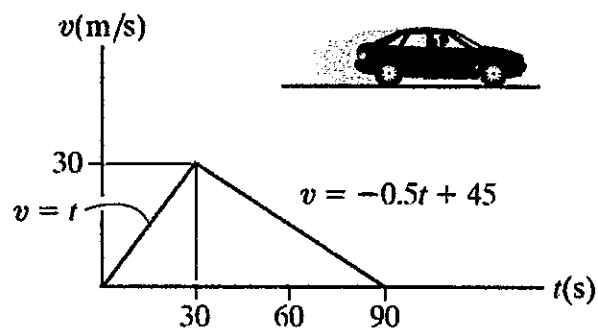1. (25%) A car starts from rest and travels along a straight line with a velocity described by the graph. Determine the total distance traveled until the car stops. Construct the graphs of displacement vs. time, and acceleration vs. time.


2. (25%) The boat travels with a speed of 16 km/h in still water. The point of destination is located along the dashed line. If the water is moving at 4 km/h, determine the bearing angle θ at which the boat must travel to stay on course.

見背面

題號: 245
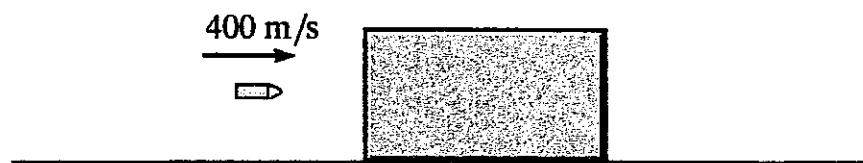科目: 動力學(C)
節次: 2

國立臺灣大學 109 學年度碩士班招生考試試題

題號：245
共 2 頁之第 2 頁
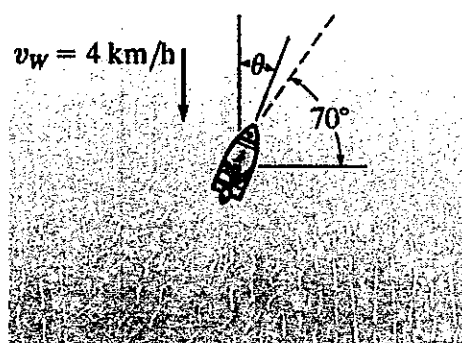
3. (25%) Determine the maximum constant speed at which the pilot can travel around the vertical curve having a radius of curvature ρ = 800 m, so that he experiences a maximum acceleration a_n = 8g = 78.5 m/s^2. If he has a mass of 70 kg, determine the normal force he exerts on the seat of the airplane when the plane is traveling at this speed and is at its lowest point.

$\rho = 800 \text{ m}$
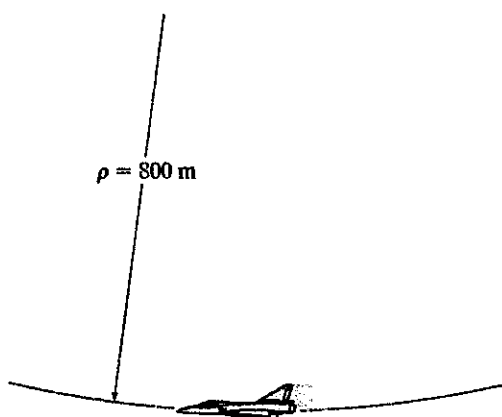
4. (25%) The 20-g bullet is traveling at 400 m/s when it becomes embedded in the 2-kg stationary block. Determine the distance the block will slide before it stops. The coefficient of kinetic friction between the block and the plane is μ_k = 0.2.

400 m/s

試題隨卷繳回