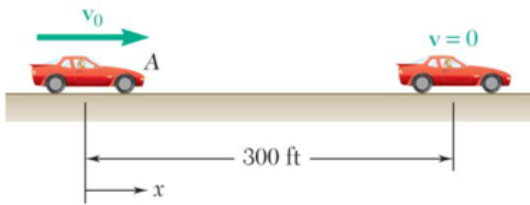
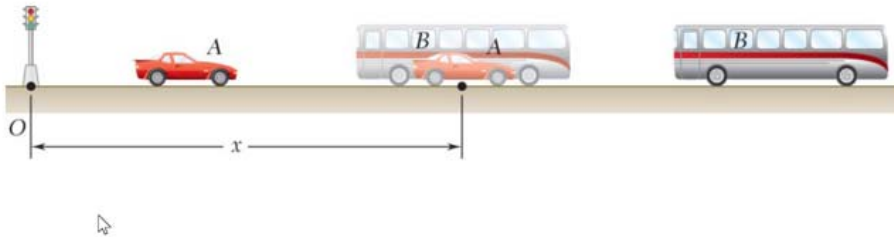


# HW #1 – Chapter 11



## PROBLEM 11.9

The brakes of a car are applied, causing it to slow down at a rate of  $10 \text{ ft/s}^2$ . Knowing that the car stops in 100 ft, determine (a) how fast the car was traveling immediately before the brakes were applied, (b) the time required for the car to stop.

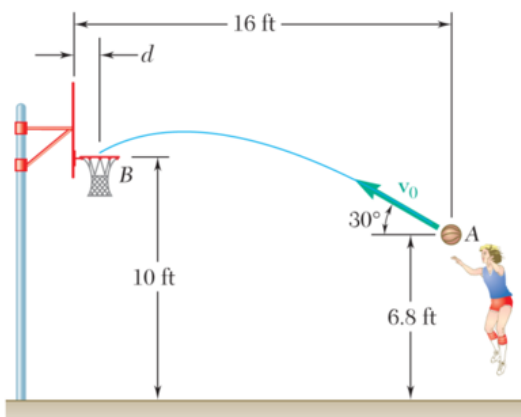
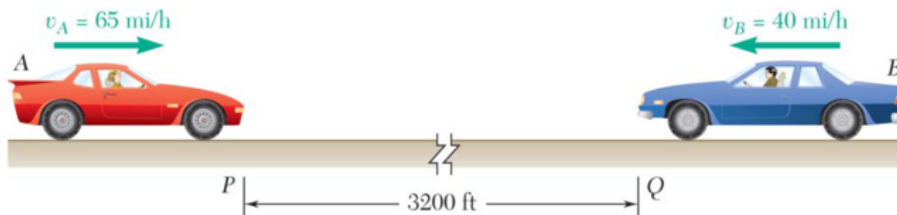


## PROBLEM 11.39

Automobile  $A$  starts from  $O$  and accelerates at the constant rate of  $0.75 \text{ m/s}^2$ . A short time later it is passed by bus  $B$  which is traveling in the opposite direction at a constant speed of  $6 \text{ m/s}$ . Knowing that bus  $B$  passes point  $O$  20 s after automobile  $A$  started from there, determine when and where the vehicles passed each other.

## PROBLEM 11.43

Two automobiles  $A$  and  $B$  are approaching each other in adjacent highway lanes. At  $t = 0$ ,  $A$  and  $B$  are 3200 ft apart, their speeds are  $v_A = 65 \text{ mi/h}$  and  $v_B = 40 \text{ mi/h}$ , and they are at Points  $P$  and  $Q$ , respectively. Knowing that  $A$  passes Point  $Q$  40 s after  $B$  was there and that  $B$  passes Point  $P$  42 s after  $A$  was there, determine (a) the uniform accelerations of  $A$  and  $B$ , (b) when the vehicles pass each other, (c) the speed of  $B$  at that time.

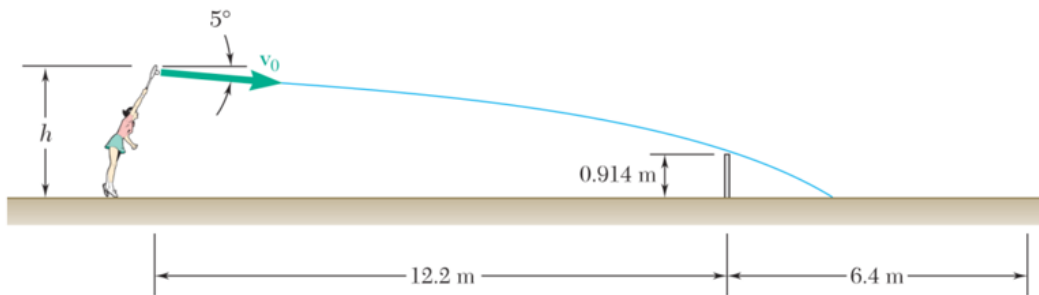


## PROBLEM 11.107

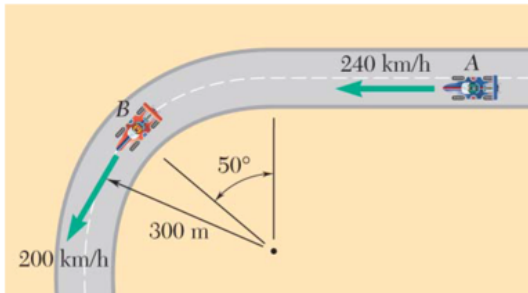
A basketball player shoots when she is 16 ft from the backboard. Knowing that the ball has an initial velocity  $v_0$  at an angle of  $30^\circ$  with the horizontal, determine the value of  $v_0$  when  $d$  is equal to (a) 9 in., (b) 17 in.

### PROBLEM 11.108

A tennis player serves the ball at a height  $h = 2.5$  m with an initial velocity of  $v_0$  at an angle of  $5^\circ$  with the horizontal. Determine the range for which of  $v_0$  for which the ball will land in the service area which extends to 6.4 m beyond the net.

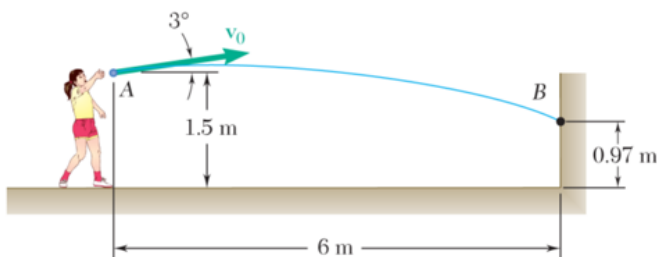


### PROBLEM 11.141



Racecar  $A$  is traveling on a straight portion of the track while racecar  $B$  is traveling on a circular portion of the track. At the instant shown, the speed of  $A$  is increasing at the rate of  $10 \text{ m/s}^2$ , and the speed of  $B$  is decreasing at the rate of  $6 \text{ m/s}^2$ . For the position shown, determine (a) the velocity of  $B$  relative to  $A$ , (b) the acceleration of  $B$  relative to  $A$ .

### PROBLEM 11.149



A child throws a ball from point  $A$  with an initial velocity  $v_0$  at an angle of  $3^\circ$  with the horizontal. Knowing that the ball hits a wall at point  $B$ , determine (a) the magnitude of the initial velocity, (b) the minimum radius of curvature of the trajectory.