

## Assignment 1

PHY1001: L02L03L04

Due Time: September 17, 23:59

**NO LATE SUBMISSION IS ACCEPTED**

**29** A certain elevator cab has a total run of 190 m and a maximum speed of 305 m/min, and it accelerates from rest and then back to rest at  $1.22 \text{ m/s}^2$ . (a) How far does the cab move while accelerating to full speed from rest? (b) How long does it take to make the nonstop 190 m run, starting and ending at rest?

**34** In Fig. 2-18, a red car and a green car, identical except for the color, move toward each other in adjacent lanes and parallel to an  $x$  axis. At time  $t = 0$ , the red car is at  $x_r = 0$  and the green car is at  $x_g = 220 \text{ m}$ . If the red car has a constant velocity of 20 km/h, the cars pass each other at  $x = 44.5 \text{ m}$ , and if it has a constant velocity of 40 km/h, they pass each other at  $x = 77.9 \text{ m}$ . What are (a) the initial velocity and (b) the constant acceleration of the green car?



Figure 2-18 Problem 34.

**47** A hot-air balloon is ascending at a rate of 14 m/s at a height of 98 m above the ground when a packet is dropped from it. (a) With what speed does the packet reach the ground, and (b) how much time does the fall take?

**64** A rock is thrown downward from an unknown height above the ground with an initial speed of 10 m/s. It strikes the ground 3.0 s later. Determine the initial height of the rock above the ground.