

62. The mass of the car is  $m = 10700/9.8 = 1.09 \times 10^3$  kg. We choose “inward” (horizontally towards the center of the circular path) as the positive direction.

(a) With  $v = 13.4$  m/s and  $R = 61$  m, Newton’s second law (using Eq. 6-18) leads to

$$f_s = \frac{mv^2}{R} = 3.21 \times 10^3 \text{ N} .$$

(b) Noting that  $N = mg$  in this situation, the maximum possible static friction is found to be

$$f_{s,\max} = \mu_s mg = (0.35)(10700) = 3.75 \times 10^3 \text{ N}$$

using Eq. 6-1. We see that the static friction found in part (a) is less than this, so the car rolls (no skidding) and successfully negotiates the curve.