70. We refer the reader to Sample Problem 6-11, and use the result Eq. 6-29:

$$\theta = \tan^{-1}\left(\frac{v^2}{gR}\right)$$

with $v = 60(1000/3600) = 17$ m/s and $R = 200$ m. The banking angle is therefore $\theta = 8.1°$. Now we consider a vehicle taking this banked curve at $v' = 40(1000/3600) = 11$ m/s. Its (horizontal) acceleration is $a' = v'^2/R$, which has components parallel the incline and perpendicular to it.

$$a_{\|} = a' \cos\theta = \frac{v'^2 \cos\theta}{R} \quad \text{and} \quad a_{\perp} = a' \sin\theta = \frac{v'^2 \sin\theta}{R}$$

These enter Newton's second law as follows (choosing downhill as the $+x$ direction and away-from-incline as $+y$):

$$mg\sin\theta - f_s = ma_{\|} \quad \text{and} \quad N - mg\cos\theta = ma_{\perp}$$

and we are led to

$$\frac{f_s}{N} = \frac{mg\sin\theta - mv'^2\cos\theta/R}{mg\cos\theta + mv'^2\sin\theta/R} \; .$$

We cancel the mass and plug in, obtaining $f_s/N = 0.078$. The problem implies we should set $f_s = f_{s,\max}$ so that, by Eq. 6-1, we have $\mu_s = 0.078$.