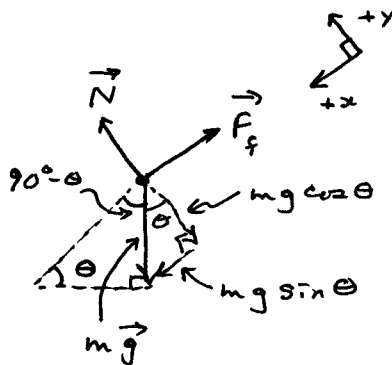


### Exercise 8-16

Forces acting on skier:

( $\theta$  = angle between hill & horizontal)



$$\vec{v} = \text{constant} \therefore \vec{a} = 0$$

$$\therefore \sum F_x = m a_x = 0$$

$$\therefore mg \sin \theta - F_f = 0$$

$$F_f = \mu_k N \therefore mg \sin \theta - \mu_k N = 0$$

$$\therefore \mu_k = \frac{mg \sin \theta}{N}$$

Determine  $N$  from  $\sum F_y = m a_y = 0$

$$N - mg \cos \theta = 0$$

$$\therefore N = mg \cos \theta$$

$$\therefore \mu_k = \frac{mg \sin \theta}{mg \cos \theta} = \tan \theta = \tan 20.0^\circ = 0.364$$