



力のつり合え、より

< x 方向 >  $T \sin(\theta + \alpha) = mg \sin \theta \dots ①$

< y 方向 >  $N + T \cos(\theta + \alpha) = mg \cos \theta \dots ②$

(1) ①より

$$T = \frac{mg \sin \theta}{\sin(\theta + \alpha)}$$

(2) ②に代入

$$N + \frac{mg \sin \theta}{\sin(\theta + \alpha)} \cos(\theta + \alpha) = mg \cos \theta$$

$$N = mg \cos \theta - \frac{mg \sin \theta}{\sin(\theta + \alpha)} \cos(\theta + \alpha)$$

$$= mg \frac{\sin(\theta + \alpha) \cos \theta - \cos(\theta + \alpha) \sin \theta}{\sin(\theta + \alpha)}$$

加法定理より

$$N = mg \frac{\sin\{(\theta + \alpha) - \theta\}}{\sin(\theta + \alpha)}$$

$$= \frac{mg \sin \alpha}{\sin(\theta + \alpha)}$$