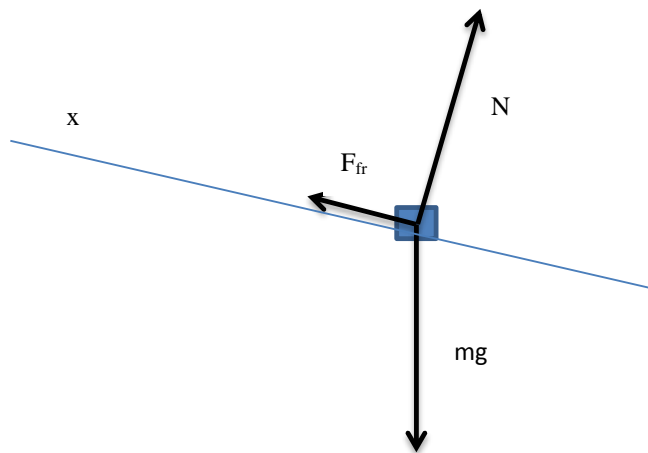


Answer on Question #40923, Physics, Mechanics | Kinametics | Dynamics

Question:

A patient lying at rest on an inclined bed starts to slide when the incline angle θ is to 17° . What is the coefficient of static friction between the patient and the bed? (Use $g = 9.81 \text{ m/s}^2$.)

Answer:



Newton's laws of motion:

$$x: \quad F_{fr} = mg \sin \theta$$

$$y: \quad N = mg \cos \theta$$

Friction force equals $F_{fr} = \mu N = \mu mg \cos \theta$, μ - coefficient of friction.

Therefore:

$$\mu = \frac{F_{fr}}{mg \cos \theta} = \frac{mg \sin \theta}{mg \cos \theta} = \tan \theta \cong 0.306$$

Answer: 0.306