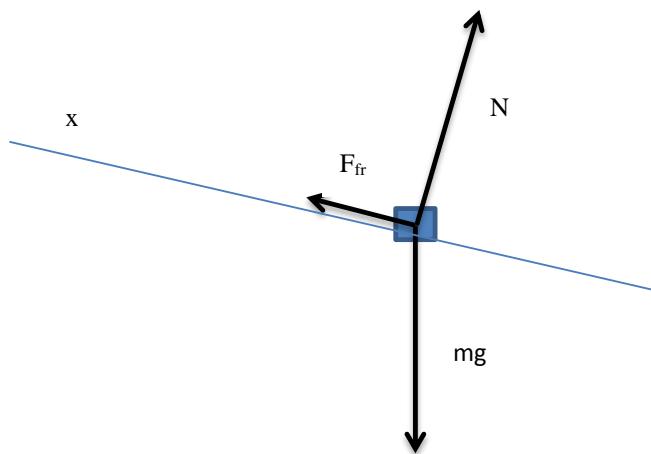


## Answer on Question #40923, Physics, Mechanics | Kinematics | Dynamics

### Question:

A patient lying at rest on an inclined bed starts to slide when the incline angle  $\theta$  is to  $17^\circ$ . 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  $F_{fr} = \mu N = \mu mg \cos \theta$ ,  $\mu$  - 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