Answer on Question 48099, Physics, Mechanics | Kinematics | Dynamics |
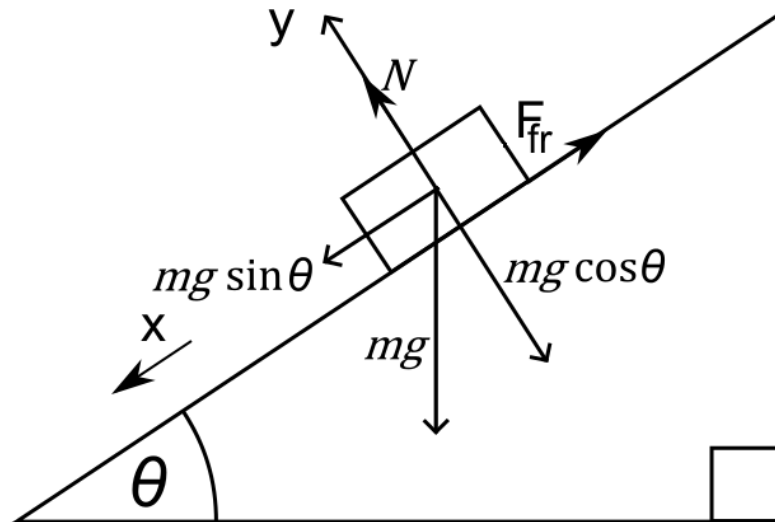
Question:

What is the force of friction holding a 225 kg box on a ramp that forma a 25 degree angle with the ground?

Solution:

Let us write all forces that acts on a box:

$$m\vec{g} + \vec{N} + \vec{F_{fr}} = 0$$

Then projected the forces on axis x and y we have:

$$m \cdot g \cdot \sin\theta - F_{fr} = 0,$$

$$-m \cdot g \cdot \cos\theta + N = 0.$$

So, we can find F_{fr}:

$$F_{fr} = m \cdot g \cdot \sin\theta = 225kg \cdot 9.8\frac{m}{s^2} \cdot \sin 25° = 926.1N$$

Answer:

$F_{fr} = 926.1N$