Question #63780, Physics / Mechanics

A motorcycle of mass 100 kg travels around a flat circular track of radius 10 m with a constant speed of 30 mi./s. What force is required to keep the motorcycle moving in a circular path at the speed?

Solution

The required centripetal force:

$$F = m\frac{v^2}{r};$$

$$F = 100\ \text{kg}\frac{(30\ \text{m/s})^2}{10\ \text{m}} = 9,000\ \text{N}$$

Answer: 9,000 N.