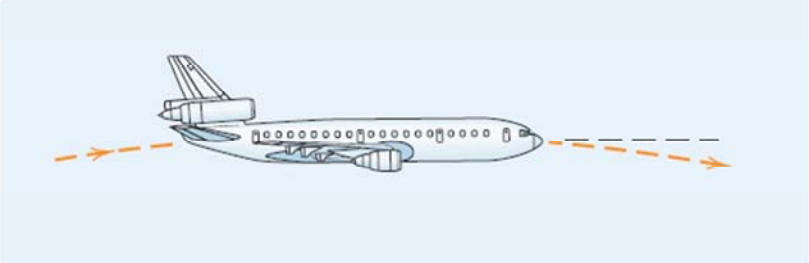
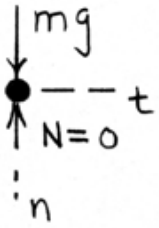
Question of the Day



A jet flies in a trajectory to allow astronauts experience a weightless condition. The ***speed*** at the highest point is ***600 mi/hr***.

What is the ***radius of curvature*** ρ necessary to simulate weightlessness?

3/56 FBD of object inside airplane:



$\Sigma F_n = ma_n$: $mg = m\frac{v^2}{\rho}$

$$\rho = \frac{v^2}{g} = \frac{\left[(600)\left(\frac{5280}{3600}\right)\right]^2}{32.2}$$

$$\rho = 24{,}050 \text{ ft}$$