

Question #79473, Physics / Other

an aero plane of mass 30000 kg travels in a horizontal loop of radius 10m at the rate of 1000 km/h. calculate the centripetal acceleration and centripetal force of aero plane

Solution

$$1000 \text{ km/h} = 278 \text{ m/s}$$

Centripetal acceleration:

$$a_c = \frac{v^2}{r} = \frac{278^2}{10} = 7,728.4 \text{ m/s}^2$$

Centripetal force:

$$F_c = ma_c = 30,000 \times 7,728.4 = 2.32 \times 10^8 \text{ N}$$

Answer: 7,728 m/s² and $2.32 \times 10^8 \text{ N}$

Answer provided by <https://www.AssignmentExpert.com>