Problem P2
At the bottom of a loop in the vertical (r-θ) plane at an altitude of 600 m, the airplane P has a horizontal velocity of 150 m/s and no horizontal acceleration. The radius of curvature of the loop is 1200 m. The plane is being tracked by radar at O.

a) What is the force the pilot experiences at the instant shown? Express your answer in terms of his mass, m.

b) What are the recorded values of \( \dot{r} \), \( \ddot{r} \), \( \dot{\theta} \) and \( \ddot{\theta} \) for this instant?