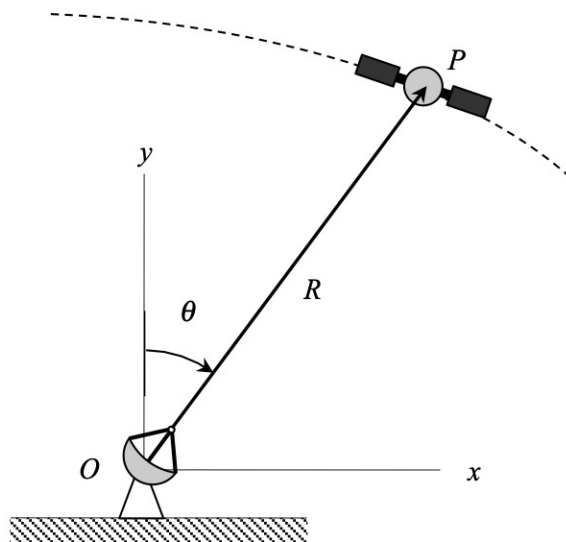


Problem H.1.H

Given: A radar observatory at point O on the surface of the earth is tracking a satellite P by measuring R and θ , and their time derivatives. Neglect any effects due to the earth's rotation in the following analysis.

Find: For this problem:

- Determine the polar components of the velocity of P , with O being the origin of the polar coordinate system.
- Make a sketch of P in this position, including a sketch of the velocity vector for P .
- Determine the x and y components of the velocity of P .



Use the following parameter in your analysis: $\theta = 0$, $R = 8 \times 10^4$ m, $\dot{R} = 2 \times 10^4$ m/s, and $\dot{\theta} = 0.4$ rad/s.