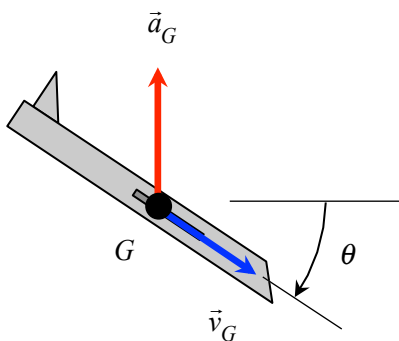


Homework H1.C

Given: At one instant in time, an aircraft is traveling along a path in a direction defined by θ below the horizontal with the center of mass G of the aircraft having a speed of $|\vec{v}_G|$. G is also known to have an acceleration that is pointing vertically upward with a magnitude of $|\vec{a}_G|$.

Find: For this given instant in time:

- (a) show the path unit vectors \hat{e}_t and \hat{e}_n , along with \vec{v}_G and \vec{a}_G , in a sketch.
- (b) determine the rate of change of speed of G and the radius of curvature of G .



Use the following parameters in your work: $\theta = 36.87^\circ$, $|\vec{v}_G| = 900 \text{ km/hr}$ and $|\vec{a}_G| = 30 \text{ m/s}^2$.