

**Problem C**

Here are a couple of situations where we wouldn't usually make a state space plot. But they are good for practice.

- (a) Consider an object starting from rest and accelerating downward due to gravity alone (no air resistance). Make a plot (by hand is fine) of  $\dot{y}$  versus  $y$ .
- (b) Now consider the same situation except with air resistance. Make a plot that shows the trajectory from  $t = 0$  into the time region where the object has reached terminal velocity.