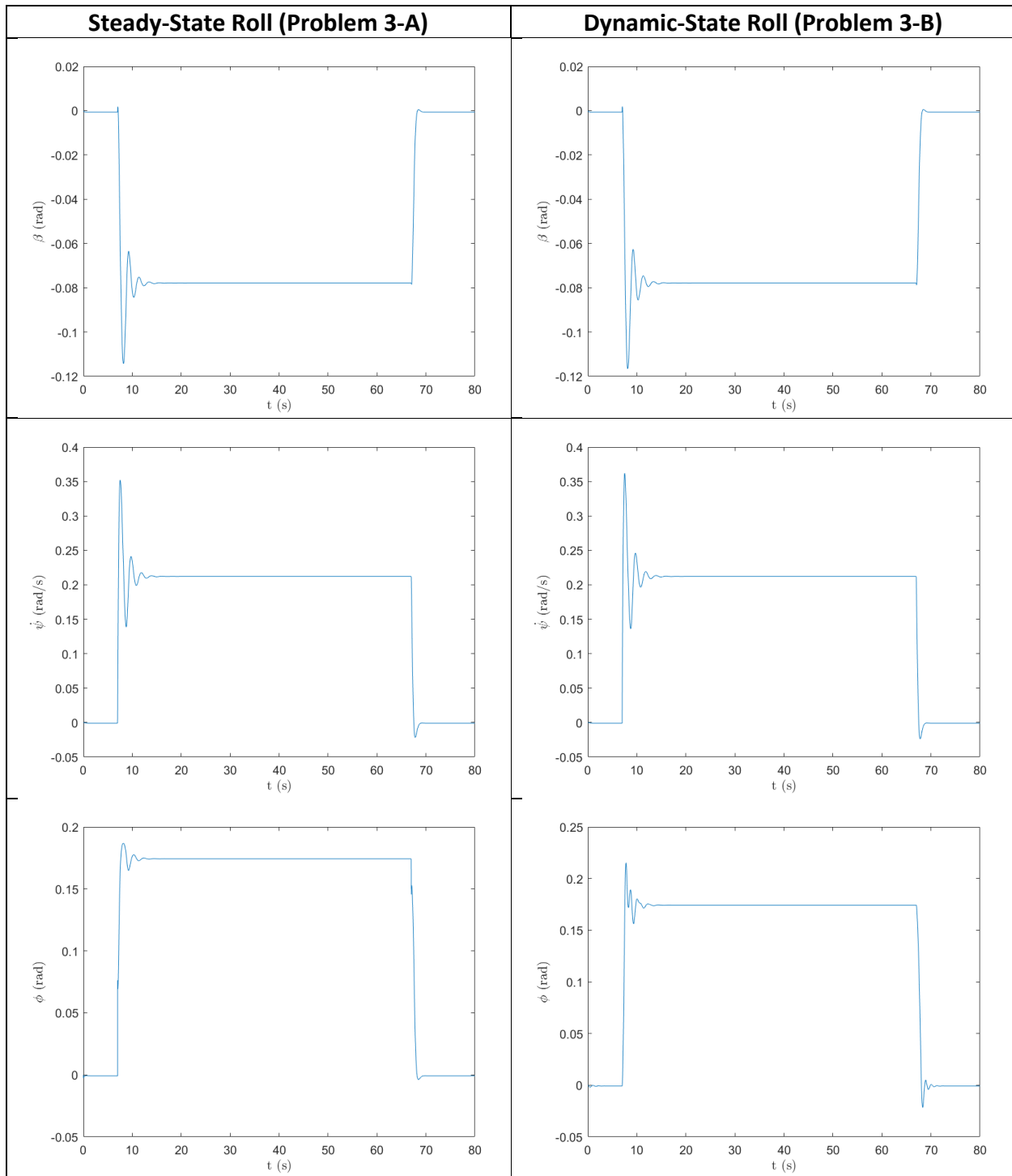
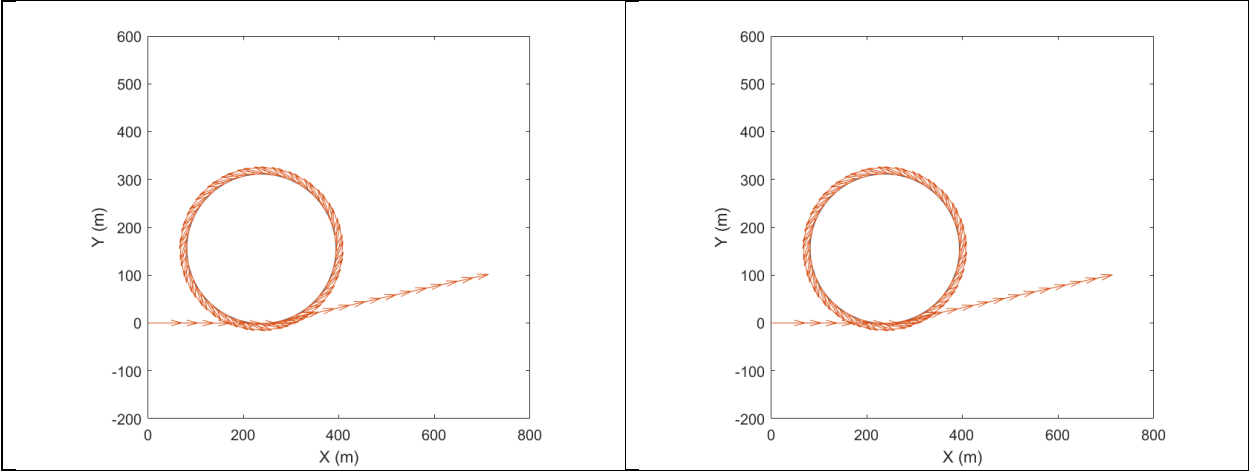


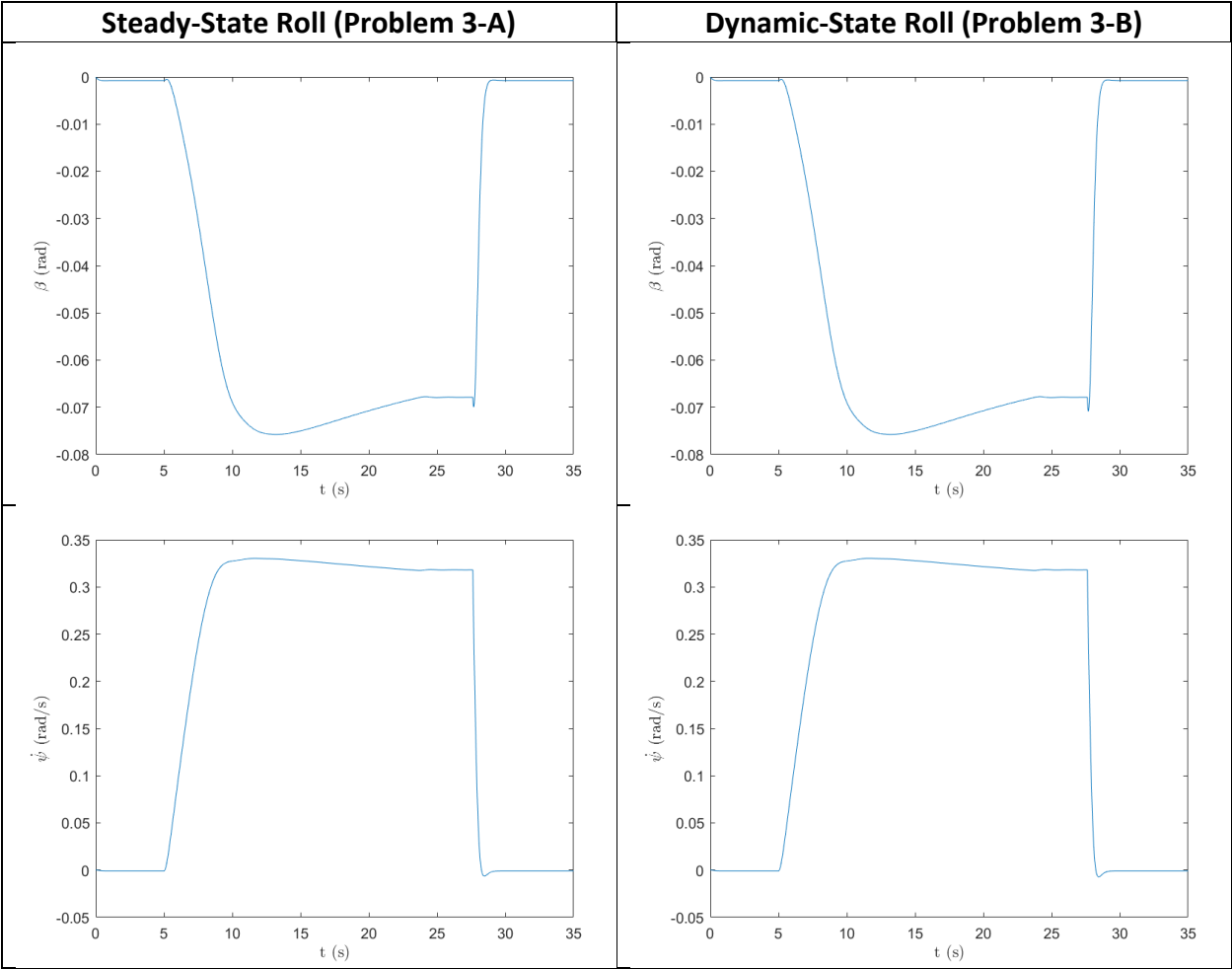
Problem 3-C

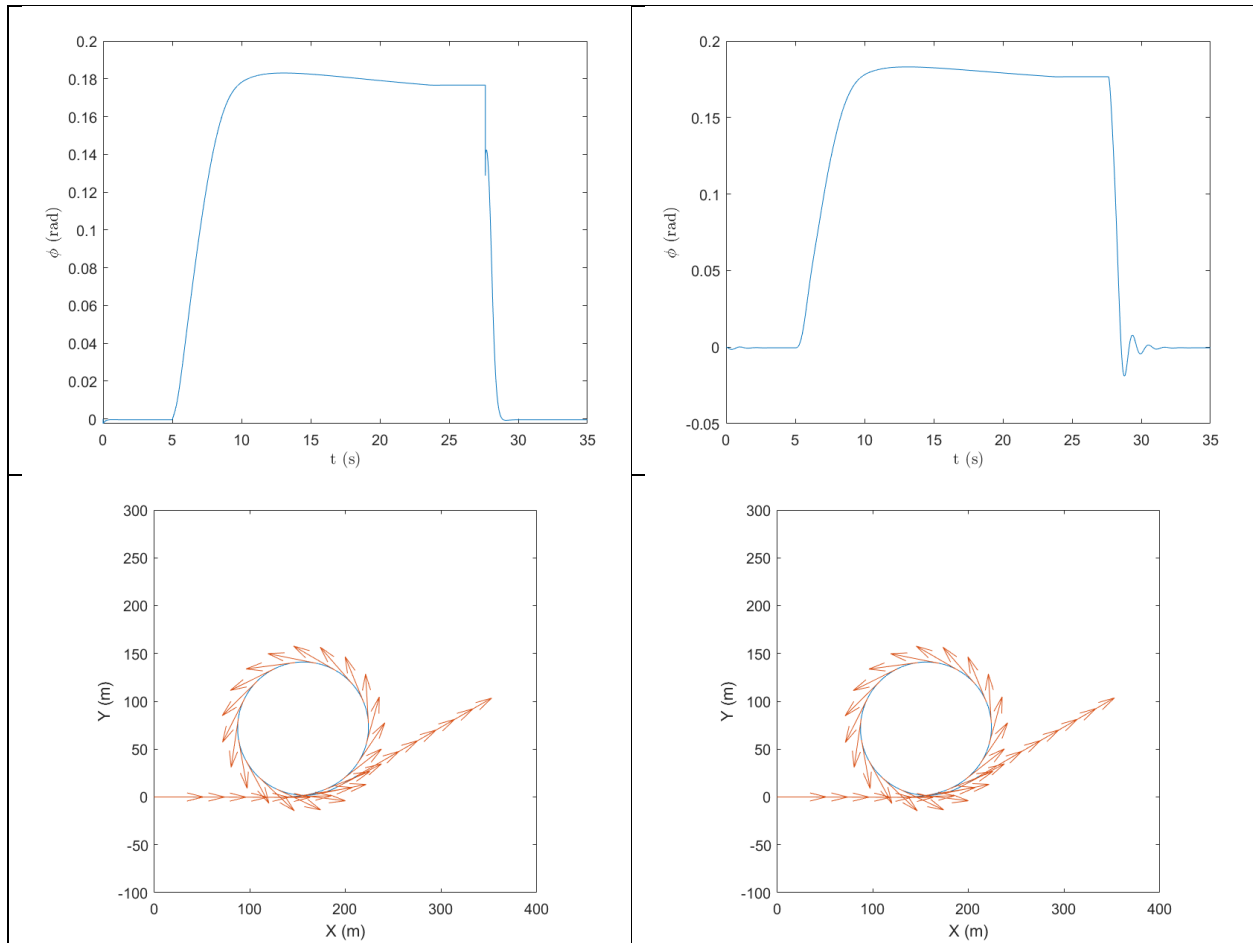
Step Maneuver





Fishhook Maneuver





Inference:

Comparing plots for steady-state and dynamic roll models (for both the maneuvers), it can be observed that the roll dynamics is affecting the vehicle states. The plot for roll angle (ϕ) vs. time clearly shows the difference when considering steady-state roll (only) as opposed to the dynamic roll (the transients are clearly visible in the plot – the peak values as well as the transient characteristic oscillations are different in each case). The vehicles states (β , $\dot{\psi}$) and the trajectory plots for CG also have slightly distinct values based on the steady-state or dynamic roll dynamics model used. This clearly shows the effect of neglecting/including transient dynamics in the simulation, and how it affects the vehicle states.