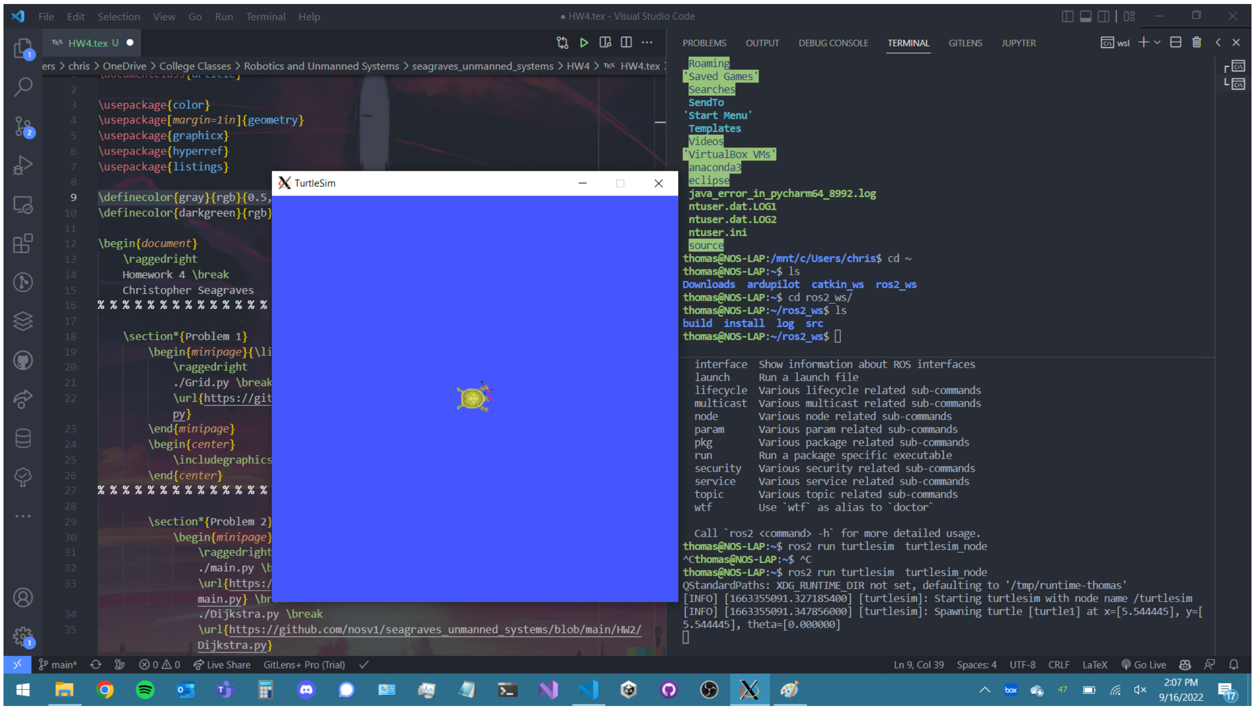
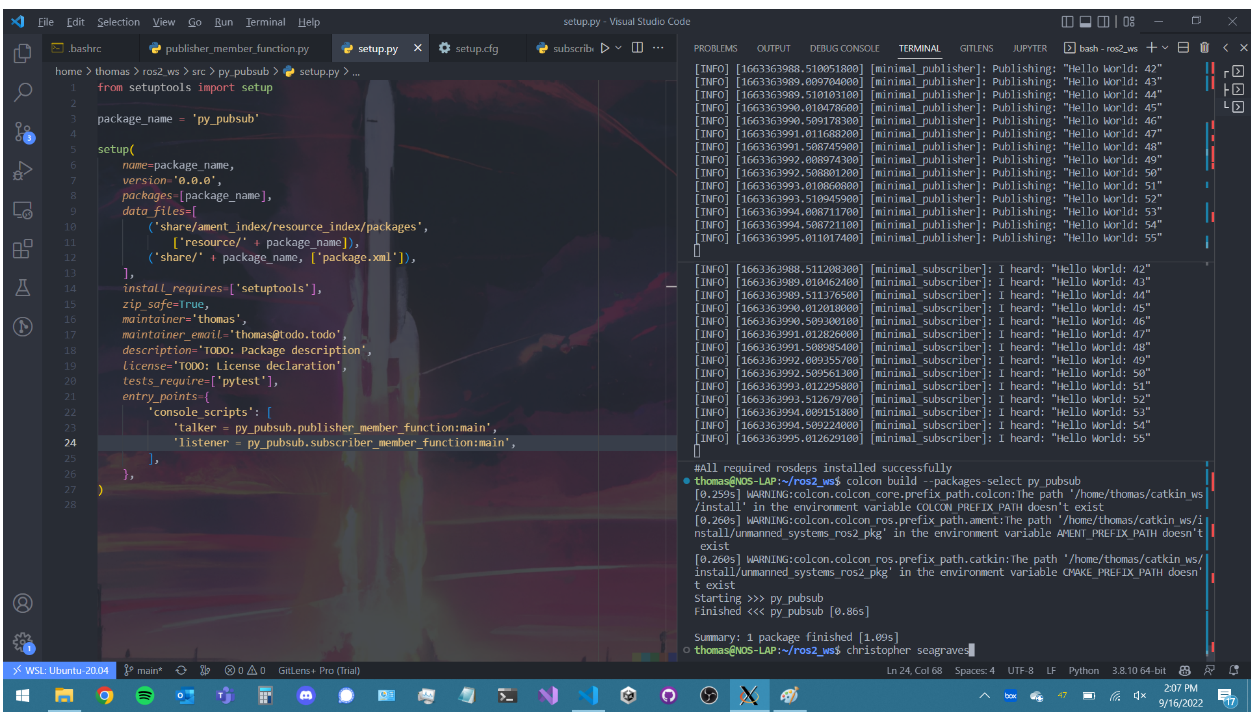
Homework 4
Christopher Seagraves

Problem 1

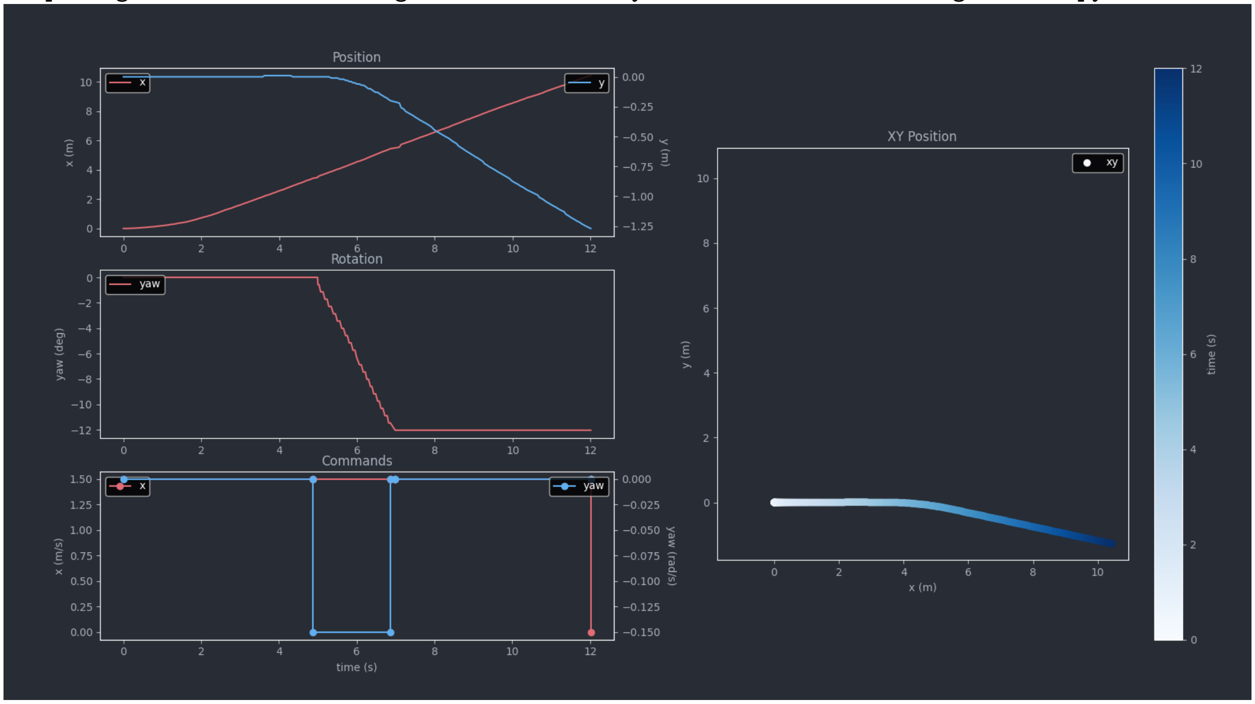


Problem 2



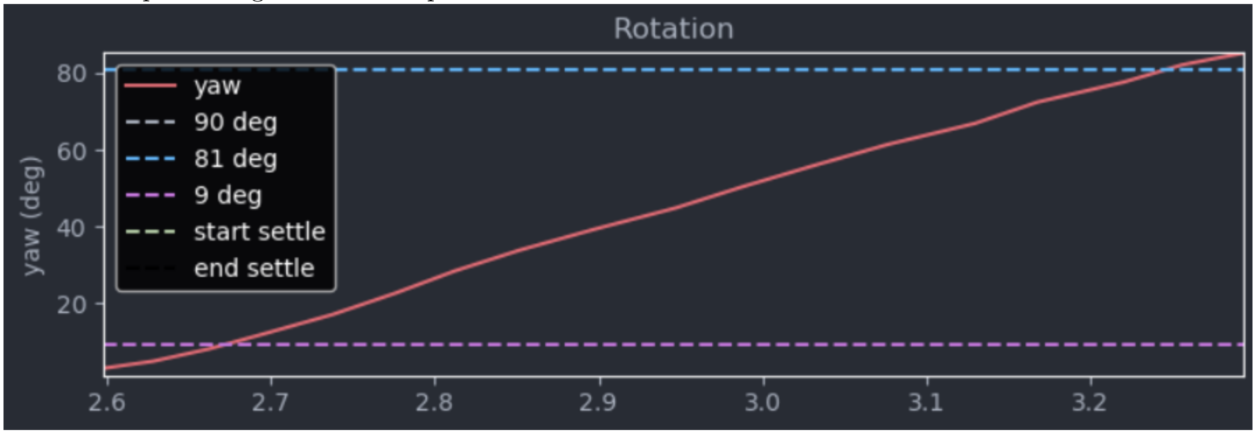
Problem 3

command_controller.py
`https://github.com/nosv1/seagraves_unmanned_systems_pkg/blob/master/seagraves_unmanned_systems_pkg/command_controller.py`
./LogPlotter.py
`https://github.com/nosv1/seagraves_unmanned_systems/blob/main/HW4/LogPlotter.py`

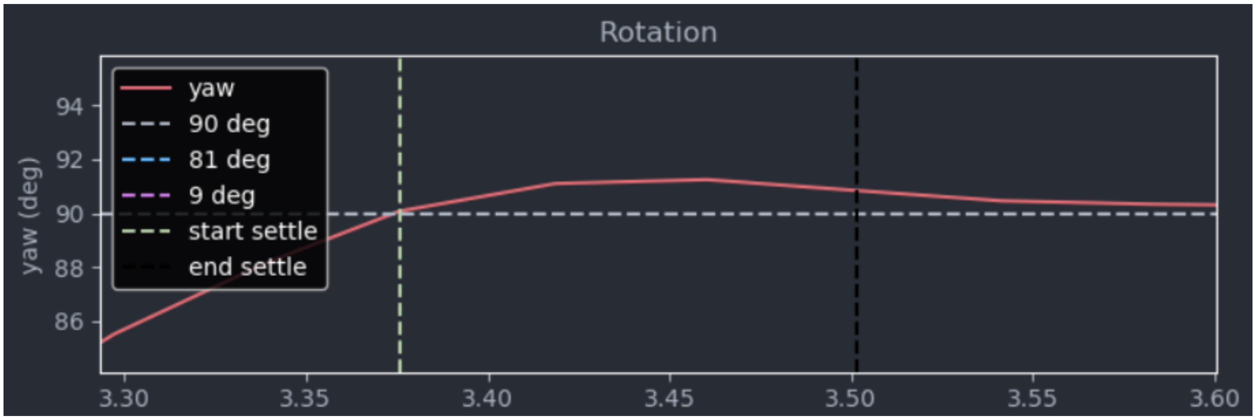


Problem 4

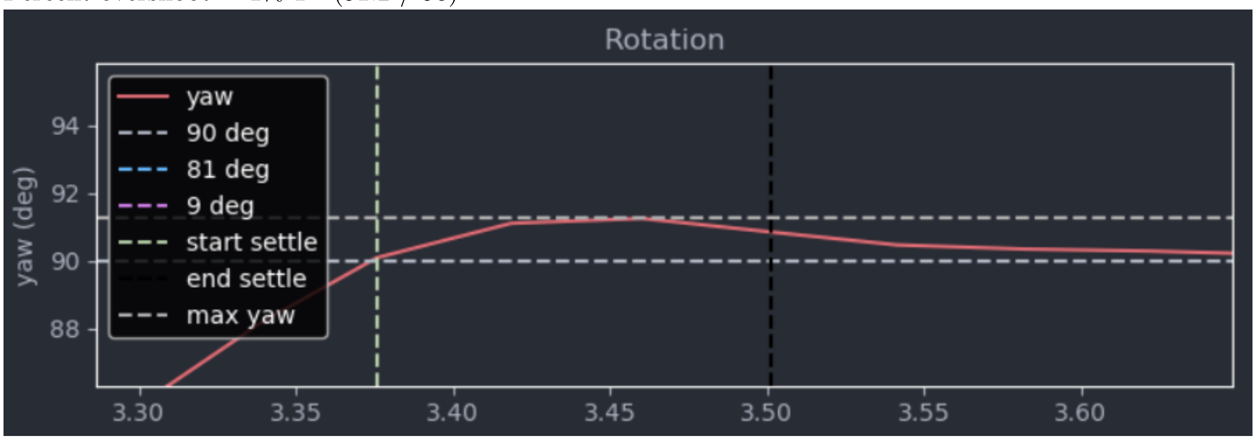
Kp = 6.5, Ki = 0.0, Kd = 0.0
Rise time = 0.6 seconds
Given Burger can turn at 2.84 rad/s (162.4 deg/s), it can complete a 90 degree turn in 0.55 seconds - about .05 seconds per 10 degrees - so the optimal rise time would be about 0.44 seconds.

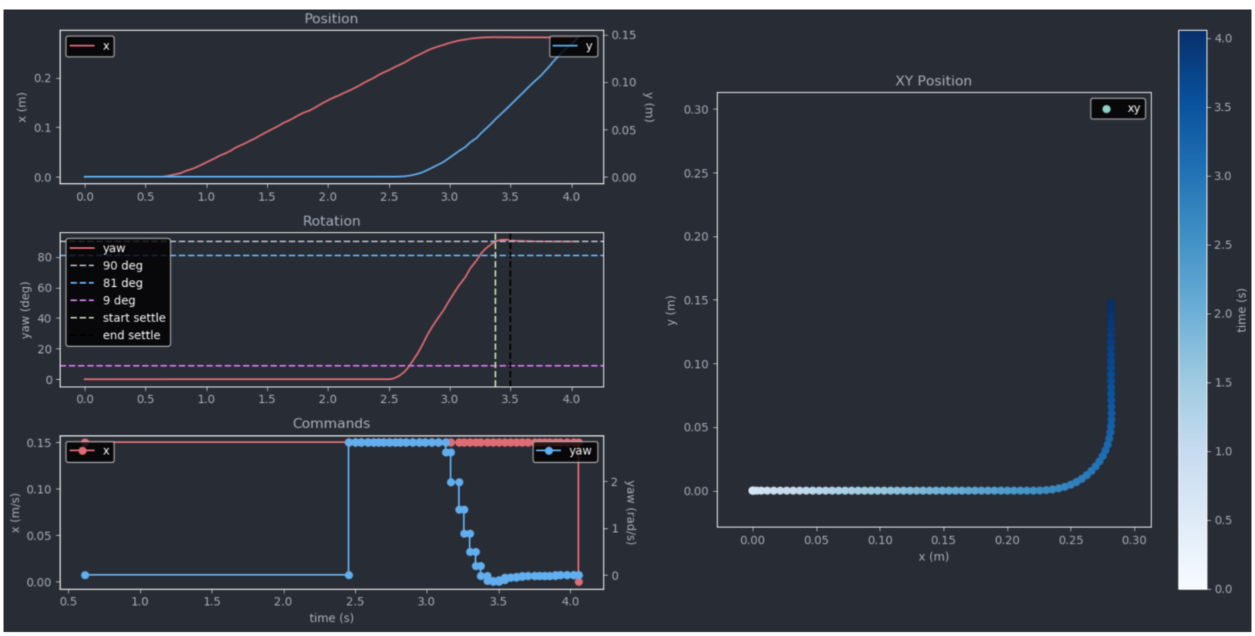


Settle time = 0.2 seconds

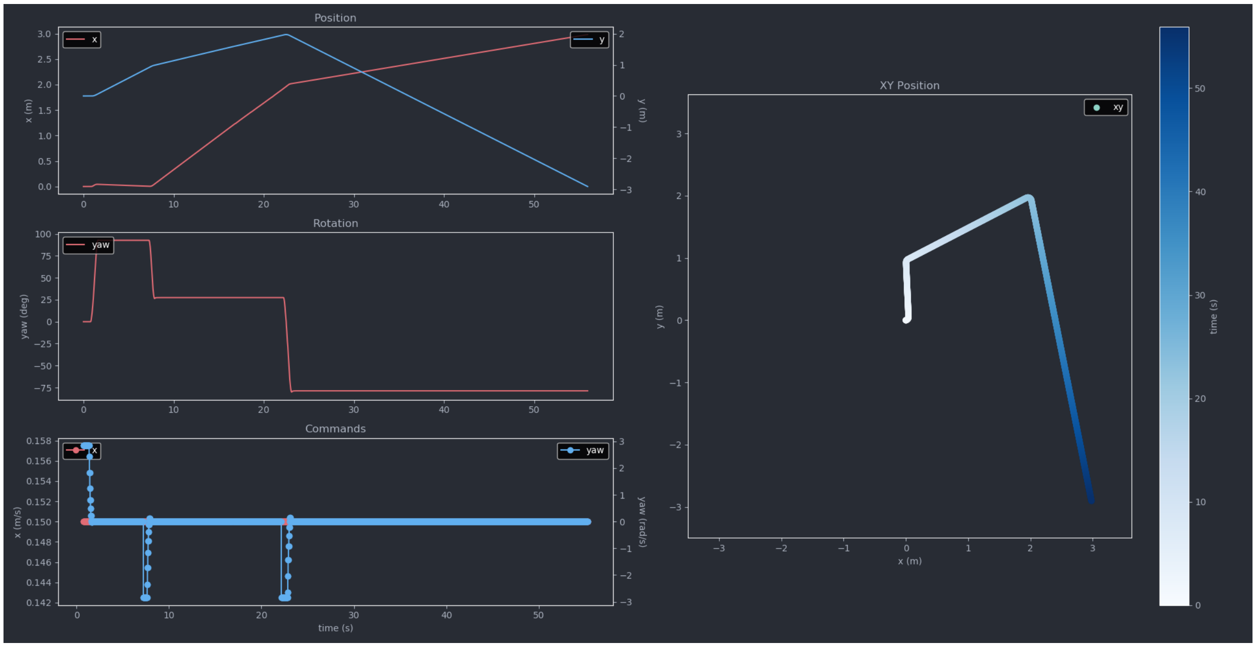


Percent overshoot = 1% 1 - (91.2 / 90)





Problem 5



Position
x
y
x (m)
y (m)
Rotation
yaw
yaw (deg)
Commands
x
yaw
x (m/s)
yaw (rad/s)
time (s)
XY Position
xy
x (m)
y (m)
time (s)