Lab 1: Proportional Control

1 Task 1.1

Yes, I would expect the motor to follow the specified reference position with an Open-loop controller. Since the controller is open loop, it has no feedback therefore, the input into the controller gain is always the same. Since the motor is determined to be changing, it sweeps from the highest point back to the lowest and increases until it repeats again. This constant motion of the motor represents a sawtooth like pattern which can be seen in the open loop transfer function output.

2. Task 1.2

a) The input response into the system follows that of a step response. Therefore, in order to have an $e_{ss} = 0$, $\lim_{s \to 0} G(s) = \infty$. The DC gain of the system must be infinite.

b) The value of $K_u = 7.15$
   The value of $P_u = 0.2$