Corresponds to Kp = 0.26, Ki = 0.02.

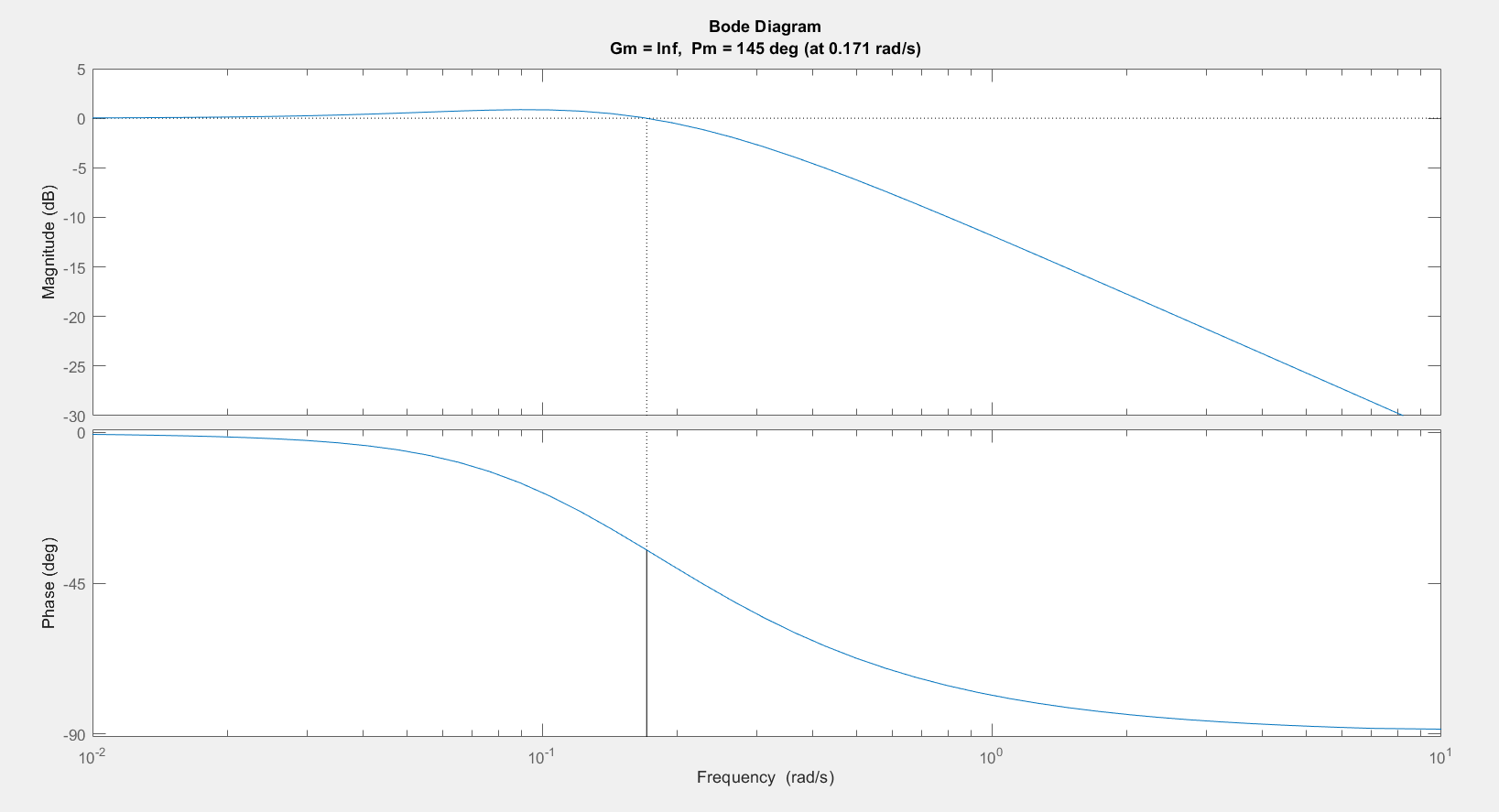
A graph on a black background

Description automatically generated

General comments – MATLAB determined it was numerically within the constraints of < 4% overshoot & damping coefficient, 0.75 < Z < 1.In this case the damping coefficient is 0.9899 so it is barely within the range. Despite being so close to critical damping, the graph is not visually reflective of this which may indicate an issue with the method.

Through testing it was found that these settings were not suitable.

Bode Plot:



Root Locus:

A graph of a line

Description automatically generated

A white background with black text

Description automatically generated

Corresponds to Kp = 1.81, Ki = 1.47:

General comments: Output signal closely follows the input signal minimising error as input grows. When input ceases increasing, minimal overshoot occurs and takes very little time to return to the selected speed. System corresponds to a damping coefficient of 0.7547.

A screenshot of a black screen

Description automatically generated

A screen shot of a graph

Description automatically generated

A screenshot of a graph

Description automatically generated

A black text with numbers

Description automatically generated with medium confidenceA graph on a white background

Description automatically generated

A graph of a function

Description automatically generated with medium confidence

Corresponds to Kp = 2.38, Ki = 1.44:

General comments – almost the same as the previous example, the difference here is that MATLAB produces a damping coefficient of 1, meaning that this system is critically damped.



A graph of a graph

Description automatically generated

A screen shot of a graph

Description automatically generated

A black text on a white background

Description automatically generated

**Part 2 Stuff:**

Plot including torque along side controller input, error, and response.

A screenshot of a computer

Description automatically generated