A picture containing fireworks, dark, water, flying

Description automatically generated

College of Engineering

School of Aeronautics and Astronautics

AAE 36401 Lab

Control Systems Lab

Lab 4 Pre-Lab

The Control of the Inverted Pendulum

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The gains using Pole Placement:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| -28.3497 | 58.7847 | -23.1039 | 12.0592 | 25.2274 |

The gains using LQR:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| -68.8145 | 156.0625 | -51.6130 | 33.2344 | 44.7214 |

The poles for Pole Placement:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| -1.8+2.2i | -1.8-2.2i | -7.5 | -4.8 | -3 |

The poles for LQR:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| -40.5785 | -2.6398+0.8961i | -2.6398-0.8961i | -2.0395+0.8637i | -2.0395-0.8637i |

Plot for LQR

A picture containing graphical user interface

Description automatically generated

Diagram

Description automatically generated

Plot for Pole Placement

A picture containing diagram

Description automatically generated

Diagram

Description automatically generated