

CS 5789 A2 Writeup

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Output cost from test_policy:

```
case 0 average cost: 6.101669315117802
case 1 average cost: 142.53411873283622
case 2 average cost: 629.061672861076
case 3 average cost: 1760.8092599666184
case 4 average cost: 4484.443939389426
case 5 average cost: inf
case 6 average cost: inf
case 7 average cost: inf
```

Analysis:

The cost function includes a penalty on the control inputs and the state deviations from a desired setpoint. The cost increase with such a large magnitude may result from the penalty term on state deviations from setpoint while the initial states have increasing deviation of a certain element in vector.

Comparison:

The cost of cartpole (LQR): 2.125

The cost of cartpole (PID): 252.723

Obviously, LQR is better than PID.