A screenshot of the average cost for the cartpole simulations is given below.

```
Running cartpole with diffferent initializations....
case 0 average cost: 5.336095815745766
case 1 average cost: 145.7925767716327
case 2 average cost: 637.72382393723
case 3 average cost: 1779.7848063808112
case 4 average cost: 4542.118541283069
case 5 average cost: inf
case 6 average cost: inf
case 7 average cost: inf
```

The difference between each case is the initial state of the cart; in particular, the angle of the pole relative to the vertical line increases with each case. For case 0, the pole begins vertically, and little force needs to be applied to ensure that the pole remains vertical. Therefore, the pole is close to the optimal position and so the cost is small. As the initial angle increases, the cart must move and swing the pole back and forth to stabilize it, which results in a larger cost, and for the last three cases, the pole starts at such an angle that it is impossible for the cart to keep it vertical, which results in an infinite cost.

The cost of the trial shown in cartpole.mp4 is shown below.

```
cost =  4.37010555498174

Process finished with exit code 0
```