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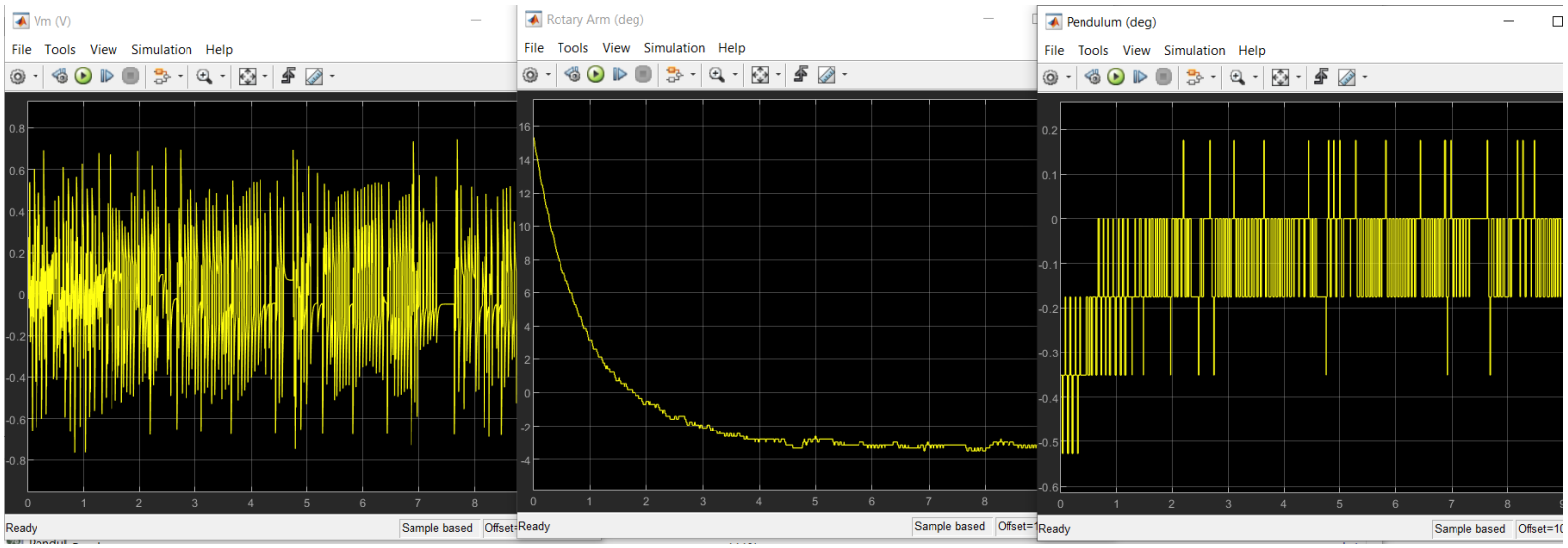
HW5

Q1. LQR

```
Q = [1 1 1 1; 1 1 1 1; 1 1 1 1; 1 1 1 1];
R = [1];
```

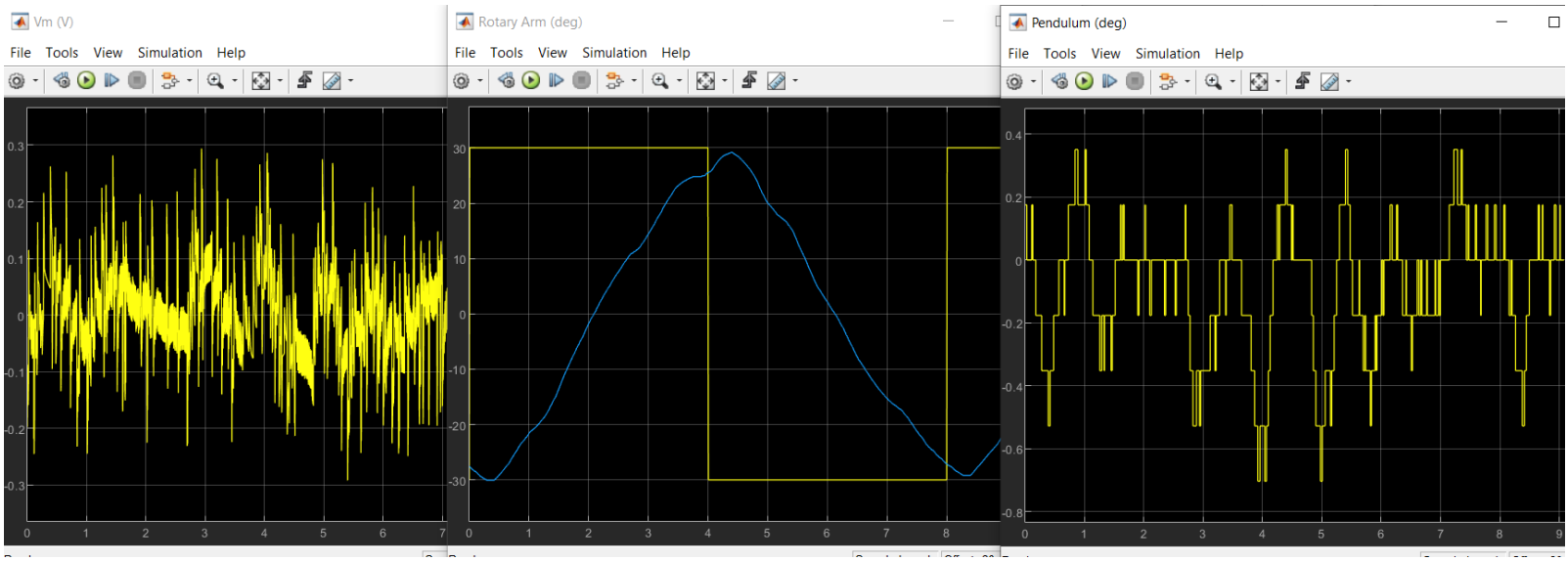


For this question, I comment out line 51 and 52 to make sure K doesn't get overwritten.

```
%Kaug = lqr(sysdaug,Qaug,Raug);
%K = Kaug(1:end-1); Ka = Kaug(end);
```

Q2. LQR with servo

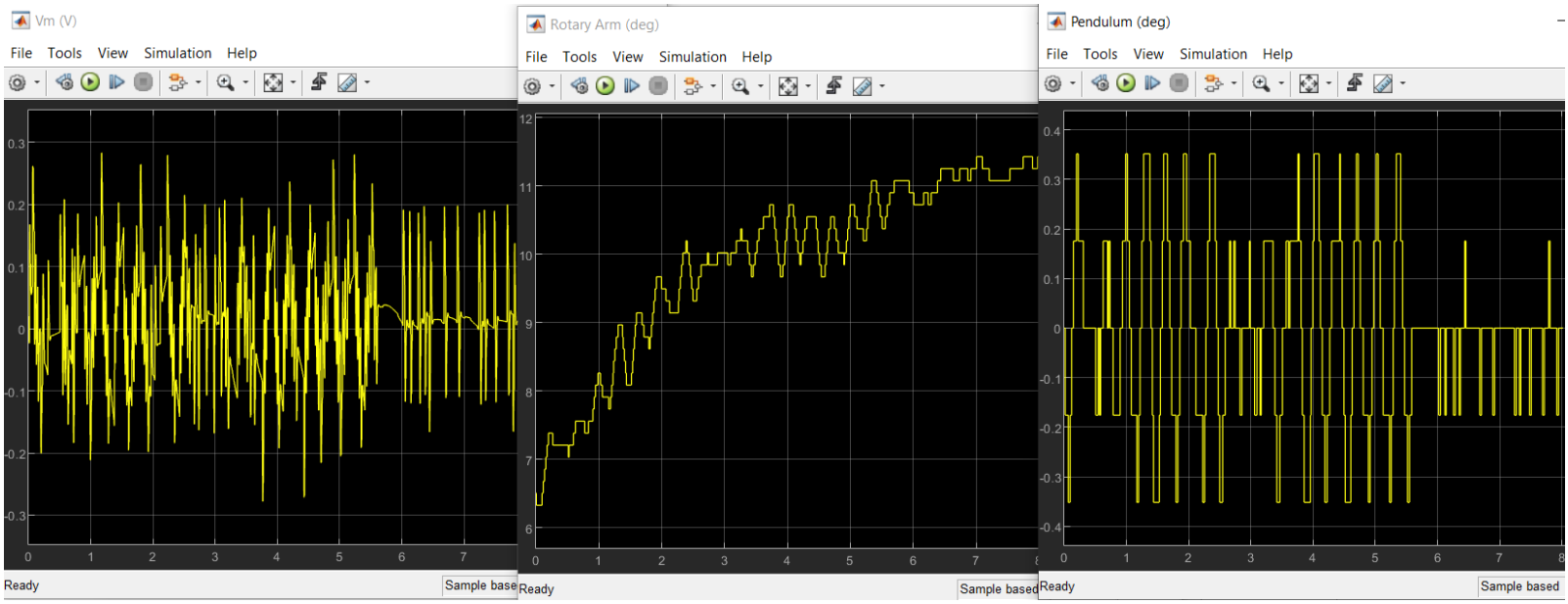
```
Qaug = 0.00000025*[1 1 1 1 1; 1 1 1 1 1; 1 1 1 1 1; 1 1 1 1 1;
1 1 1 1 1];
Raug = [1];
```



Rotary arm angle start out going over 30 and -30 deg, but eventually (after ~10 s) will stay between 30 and -30 deg.

Q3. LQG

```
Qn = [1000];
Rn = [1];
Q = 0.00001*[1 1 1 1; 1 1 1 1; 1 1 1 1; 1 1 1 1];
R = [1];
```

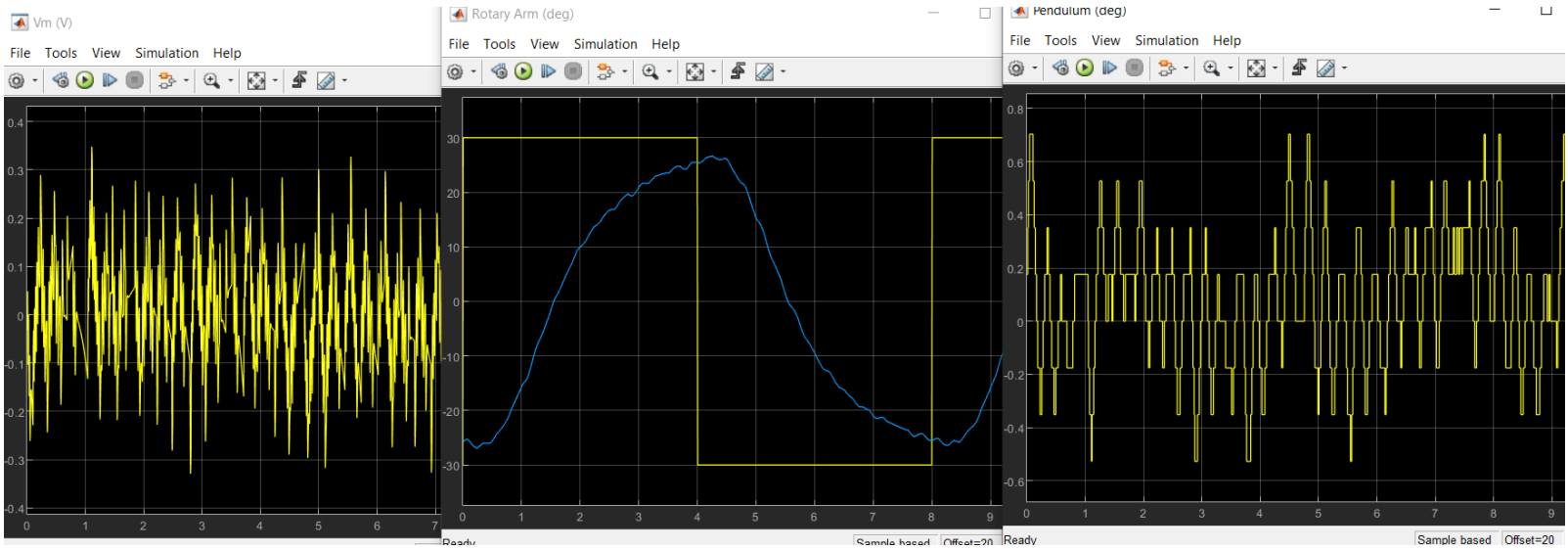


For this question, I comment out line 51 and 52 to make sure K doesn't get overwritten.

```
%Kaug = lqr(sysdaug,Qaug,Raug);
%K = Kaug(1:end-1); Ka = Kaug(end);
```

Q4. LQG with servo

```
Qn = [1000];
Rn = [1];
Qaug = 0.00000035*[1 1 1 1 1; 1 1 1 1 1; 1 1 1 1 1; 1 1 1 1 1;
1 1 1 1 1];
Raug = [1];
```



Similar issue to Q2, where rotary arm angle start out going over 30 and -30 deg, but eventually it will stay between 30 and -30 deg.