# 自動控制II報告

To Find Response on Z-Transform

**系級： 機械3A**

**學號： 102303022**

**姓名： 賴言厚**

**指導老師： 黃衍任 教授**

**102303022**

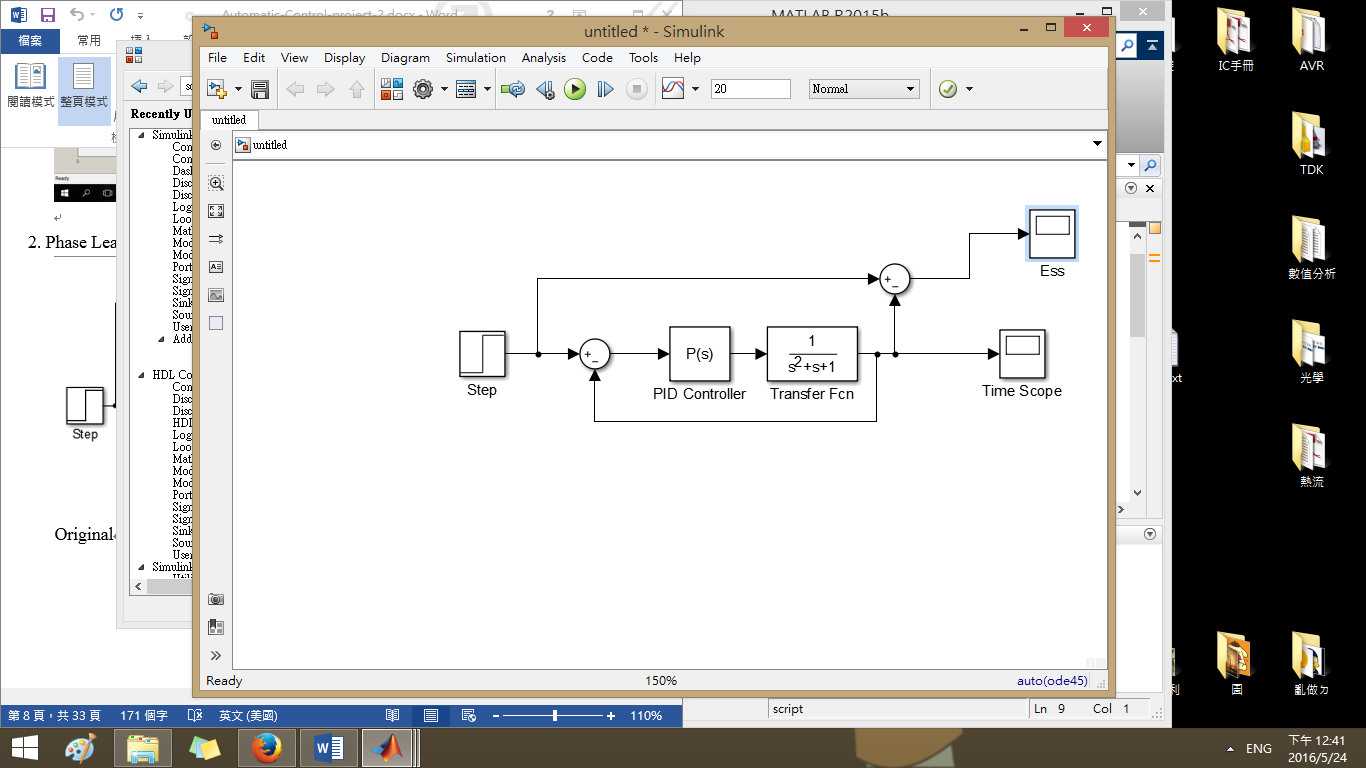
**1+0+2+3+0+3+0+2+2=13**

**a = 1,b =3 ;**

**G(s) = 1/s^2 + as + b = 1 / s^2 + s + 3**

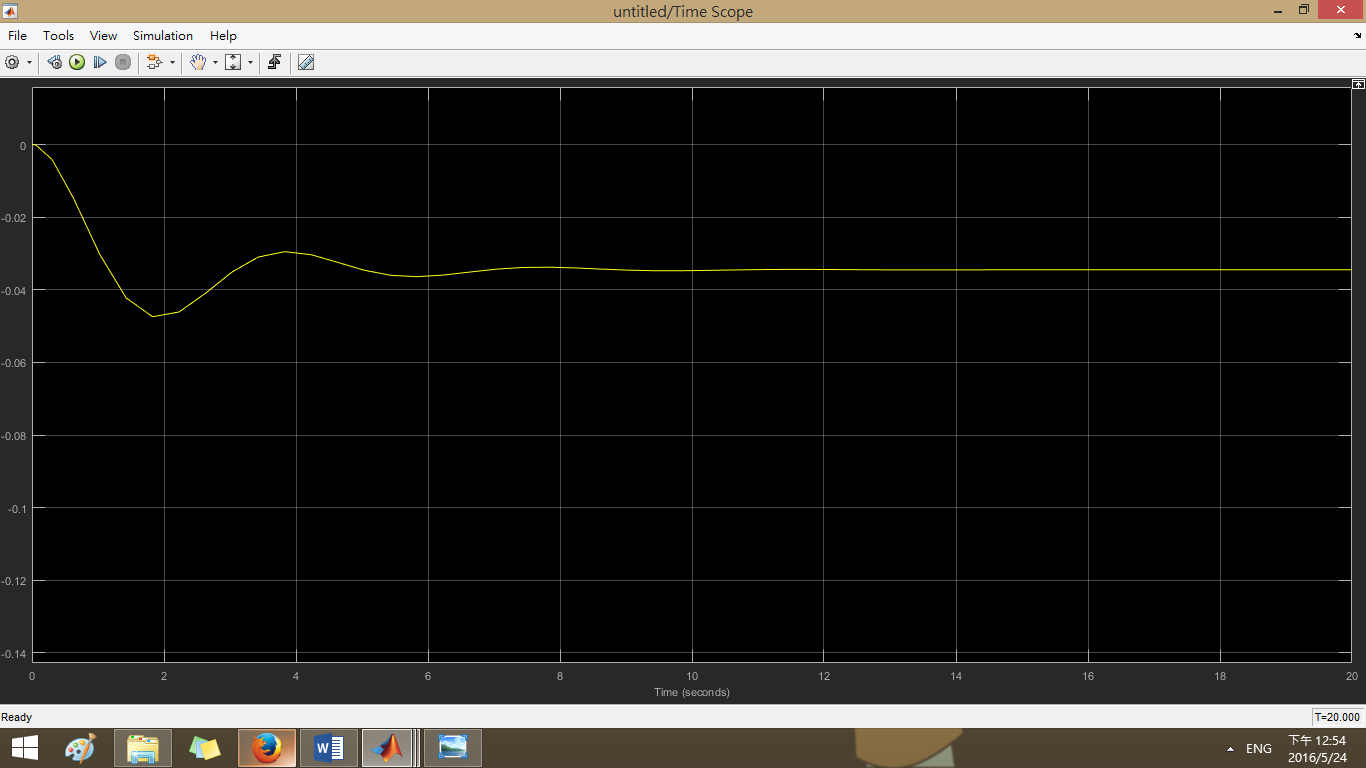
**第一題**

P control K = -0.1

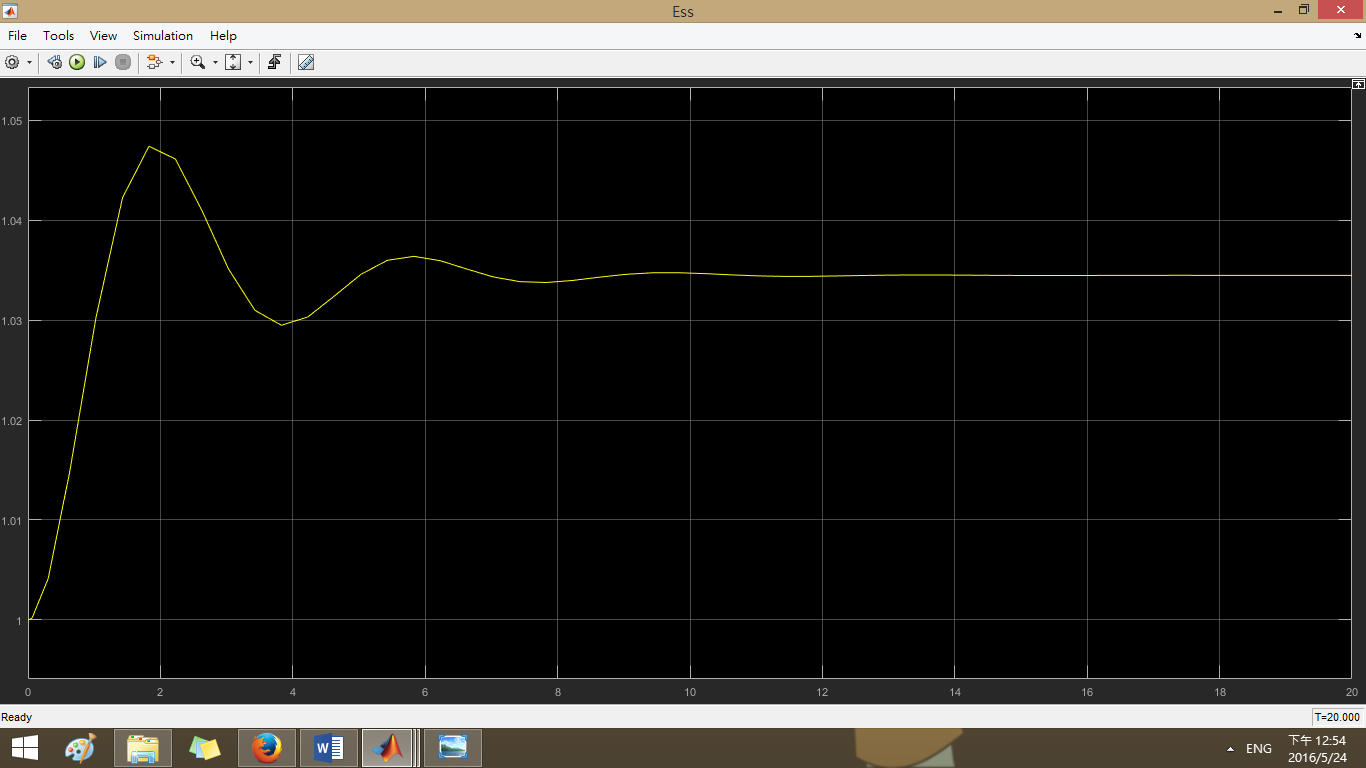
* 1. Type : Variable-Step
  2. Solver:ODE45

Original

Time-response

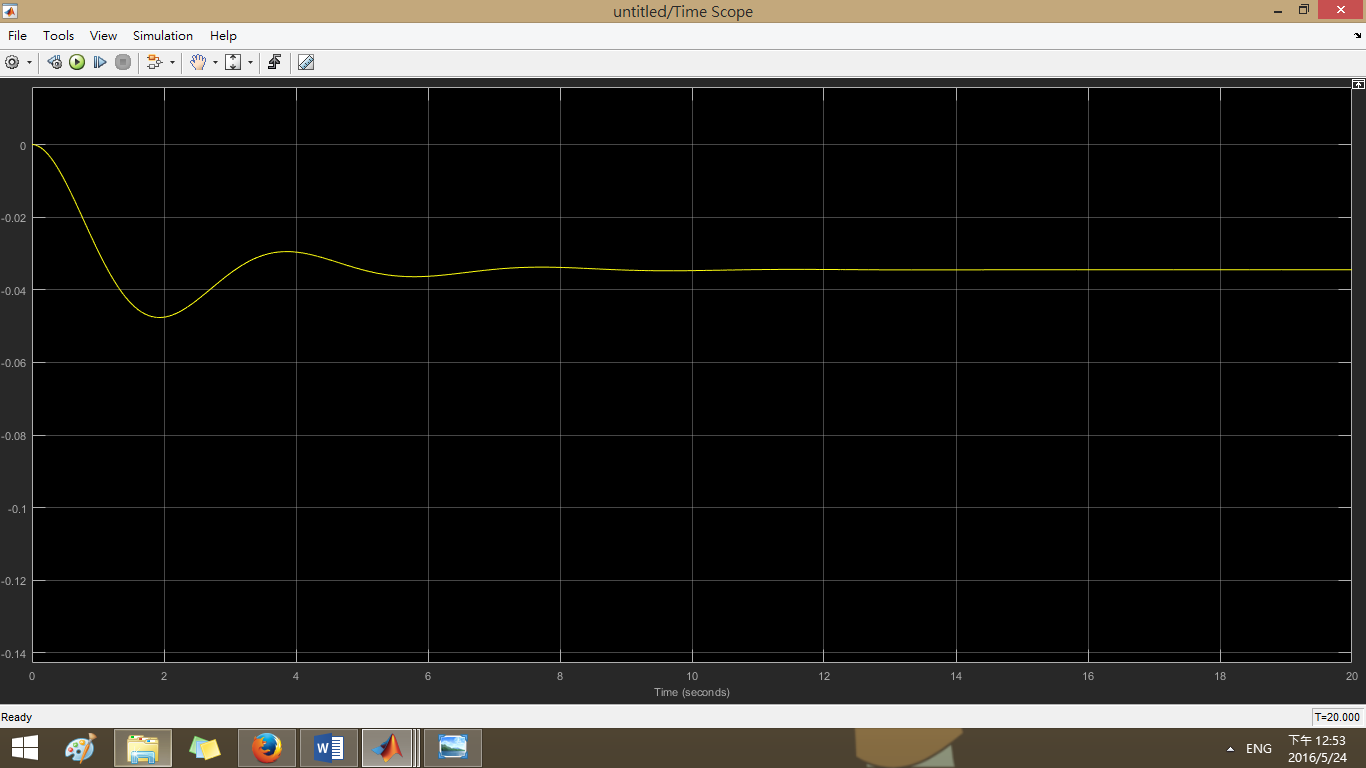


Error

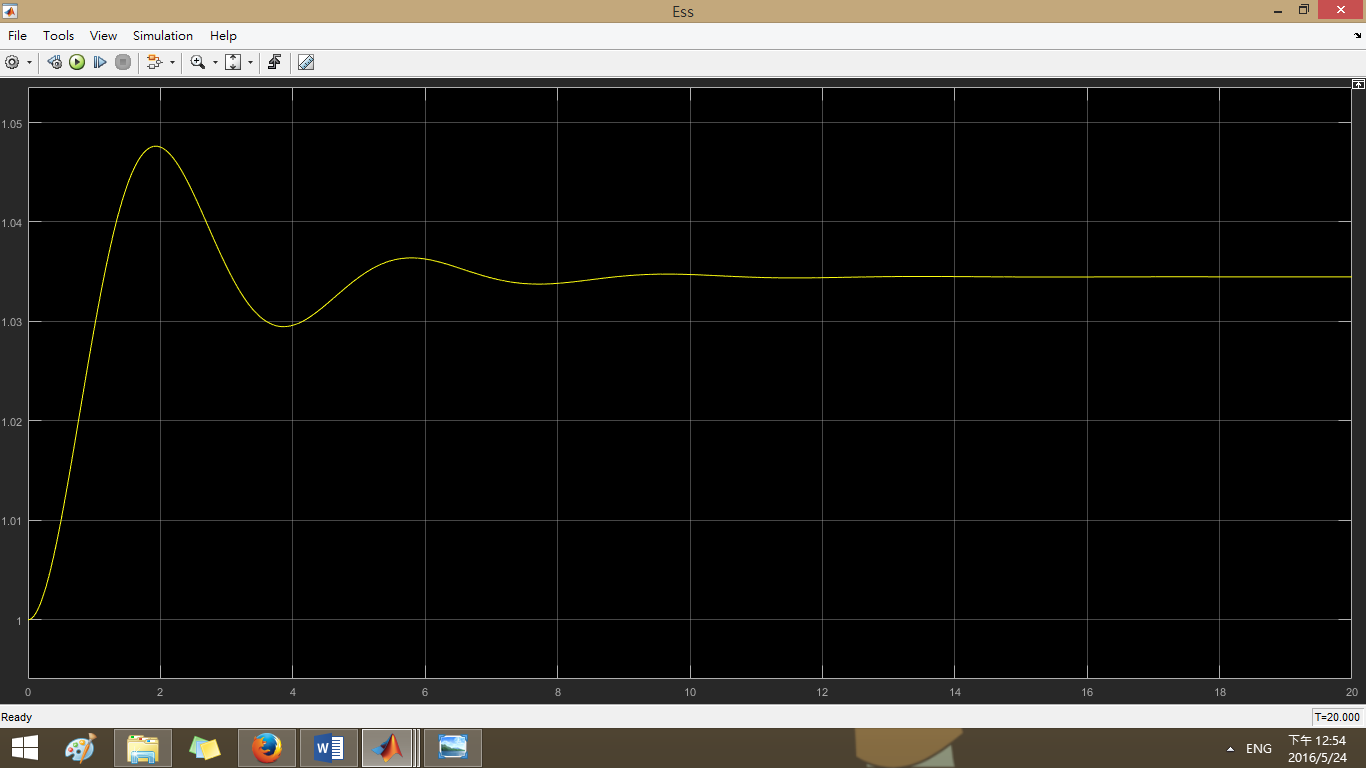


T sample:0.001

Time-response

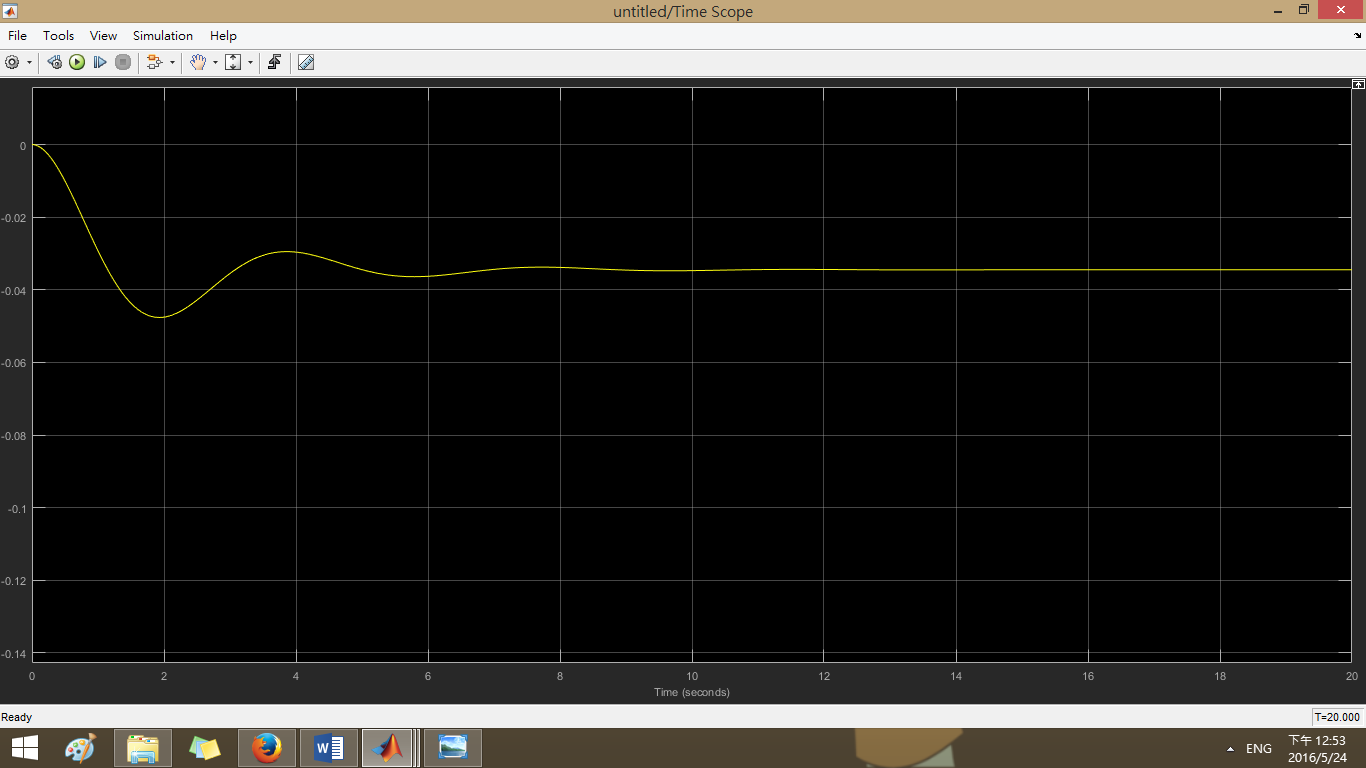


Error

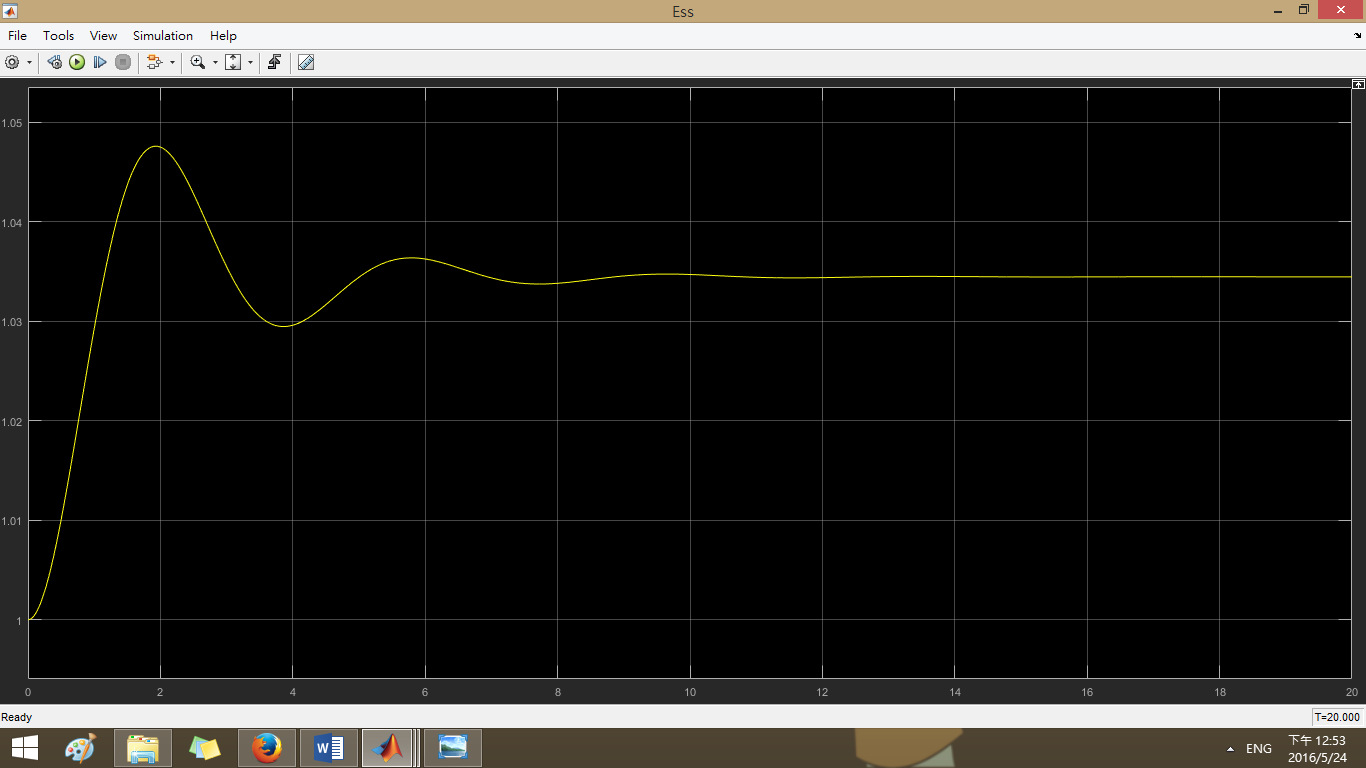


T sample:0.01

Time-response

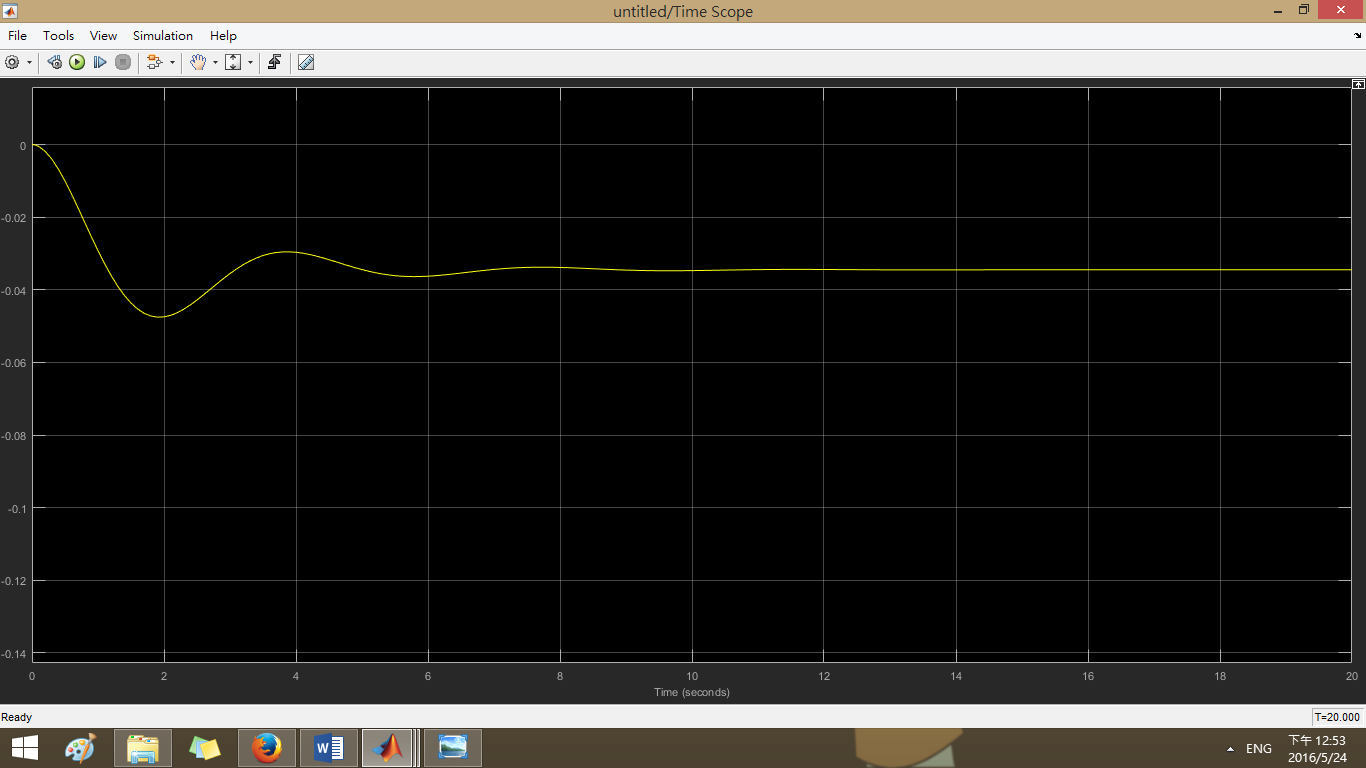


Error

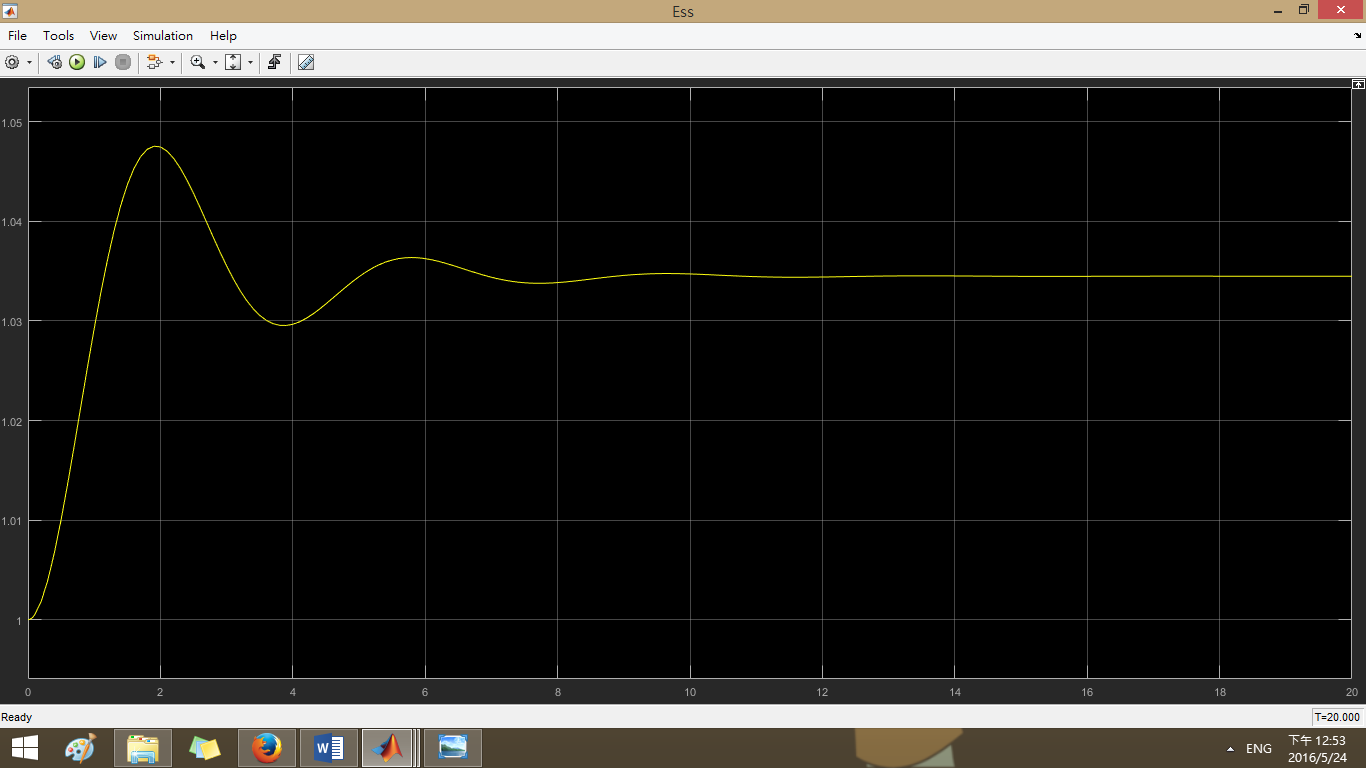


T sample:0.1

Time-response

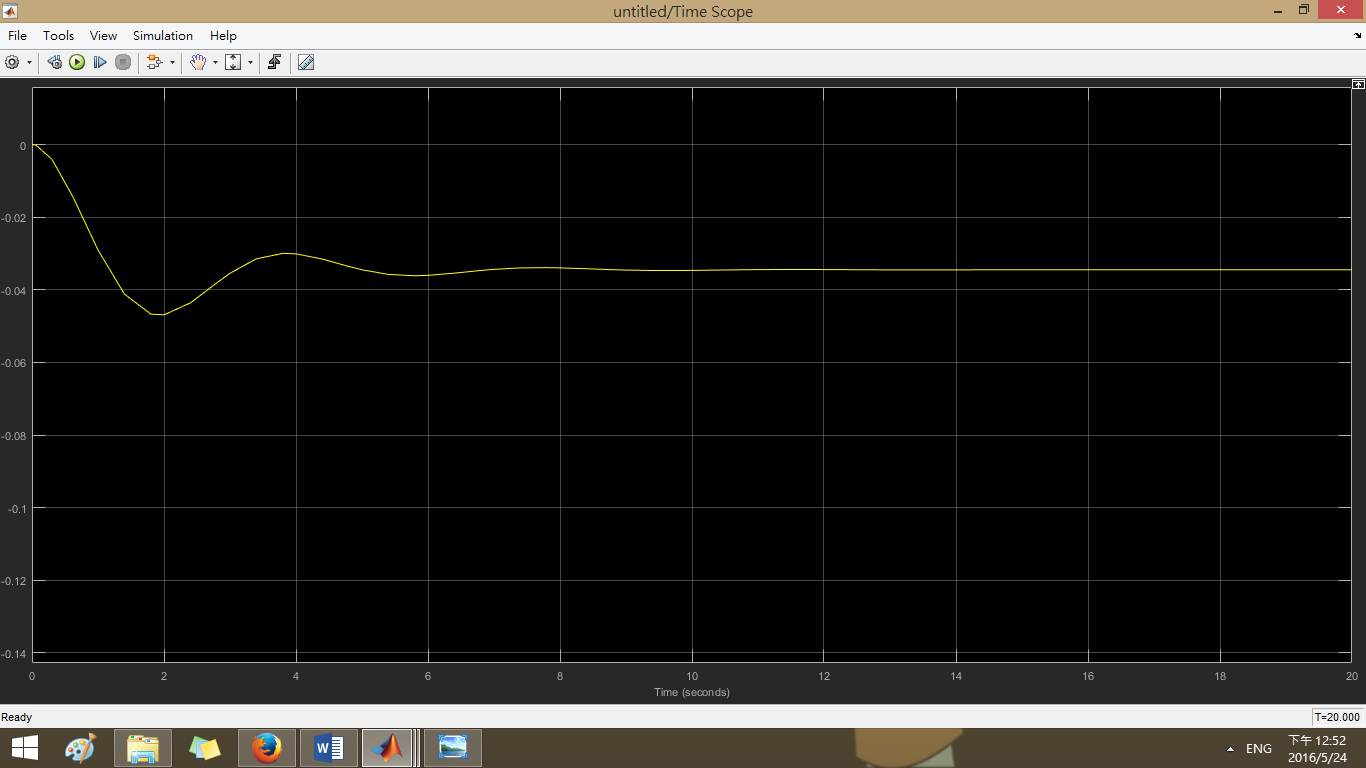


Error

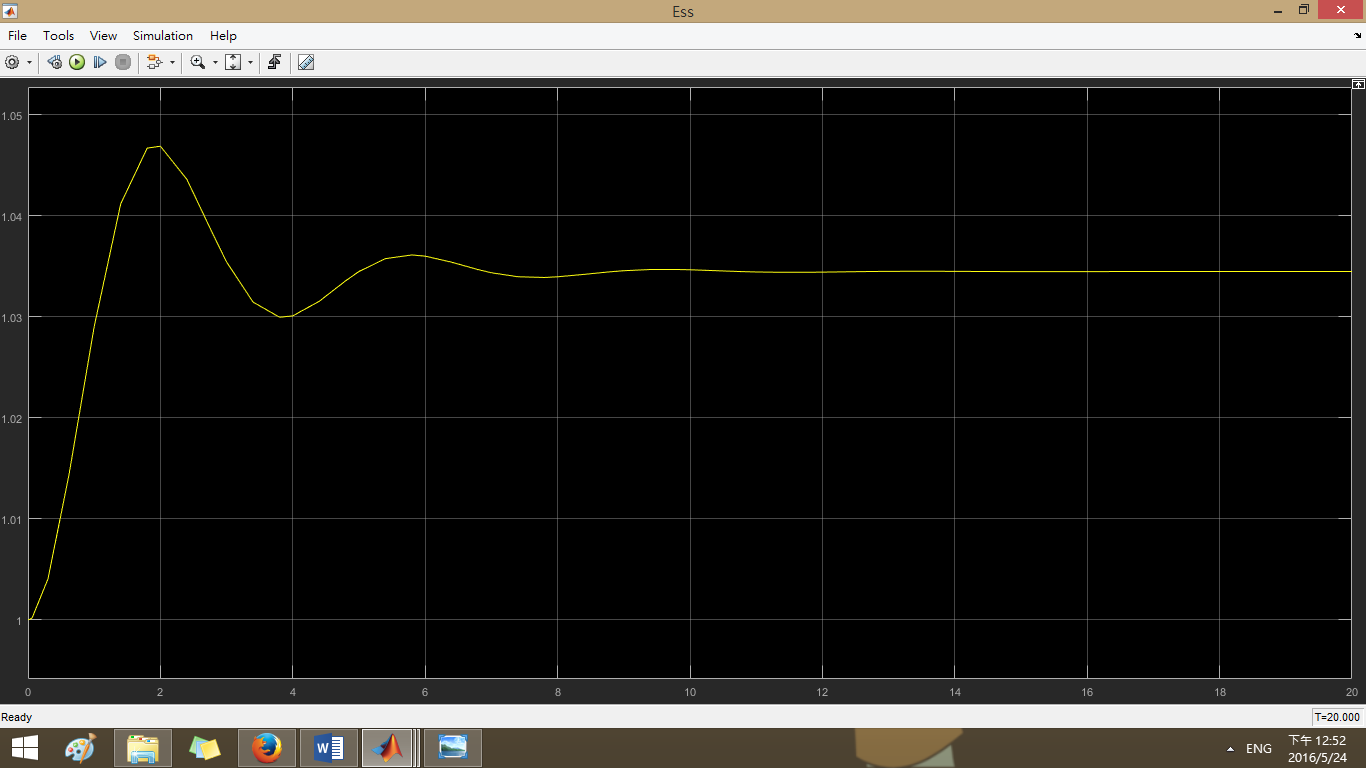


T sample:1

Time-response

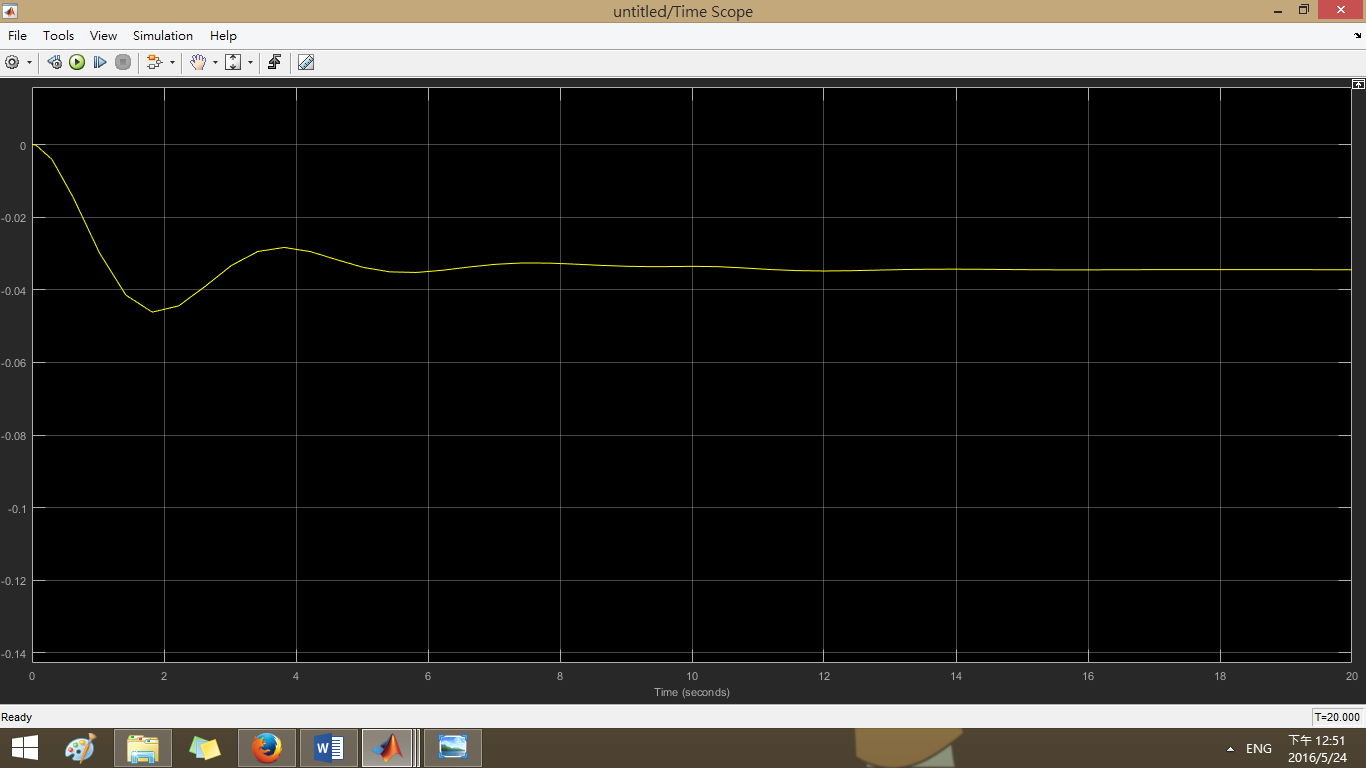


Error

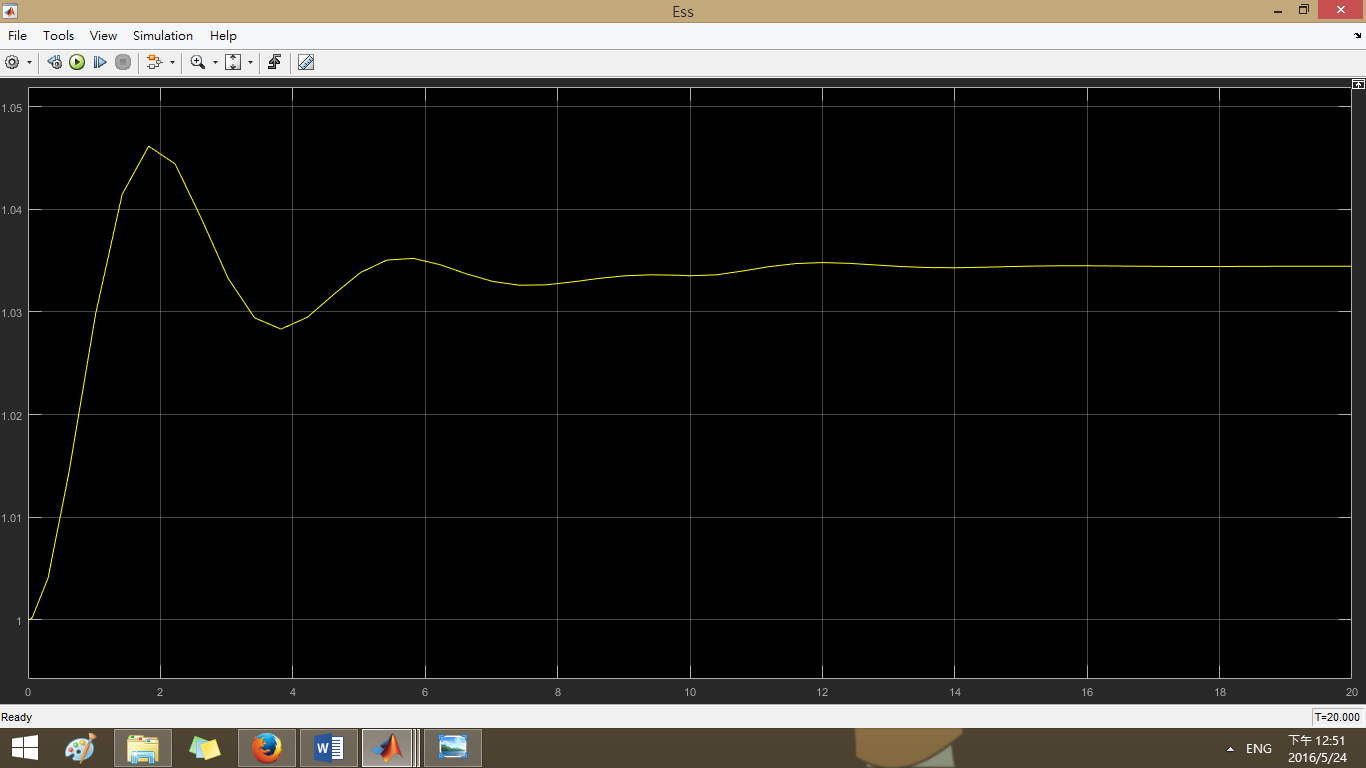


T sample:10

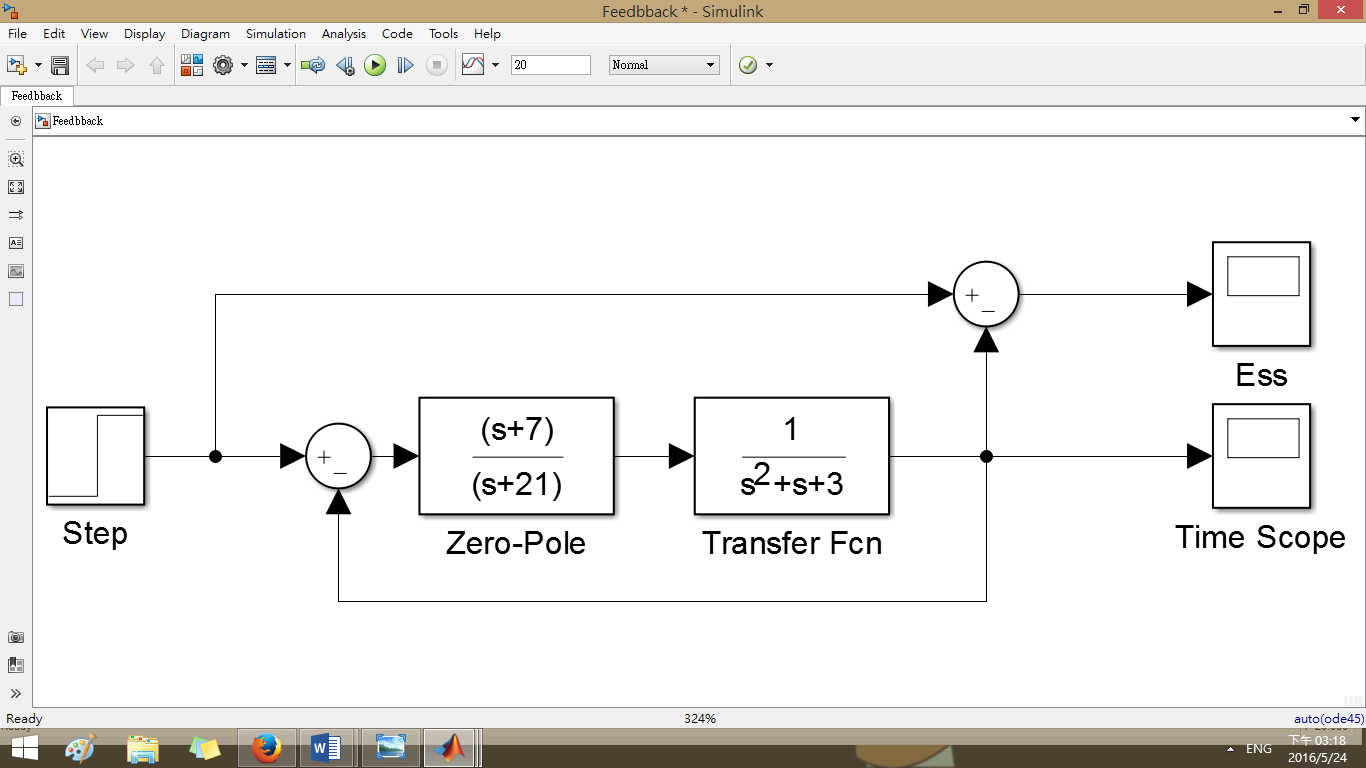
Time-response



Error

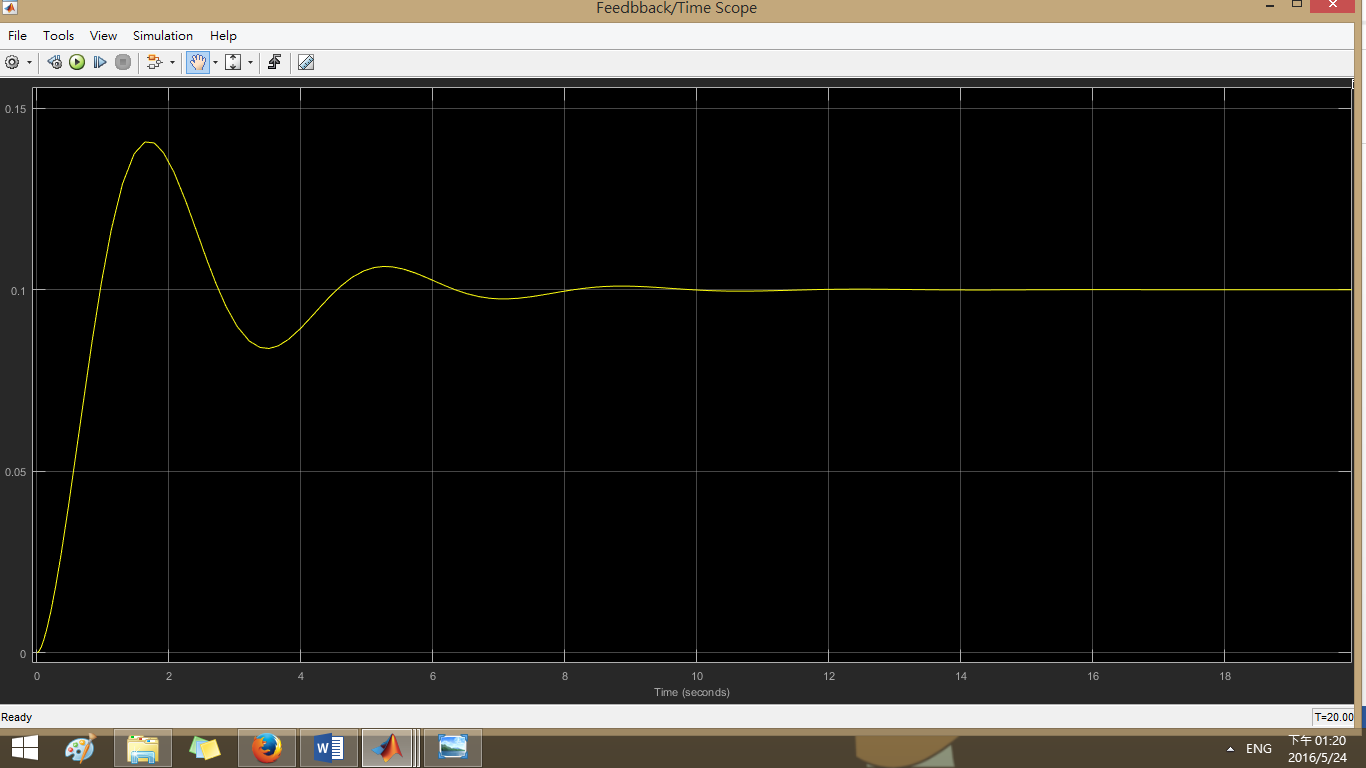


2. Phase Lead

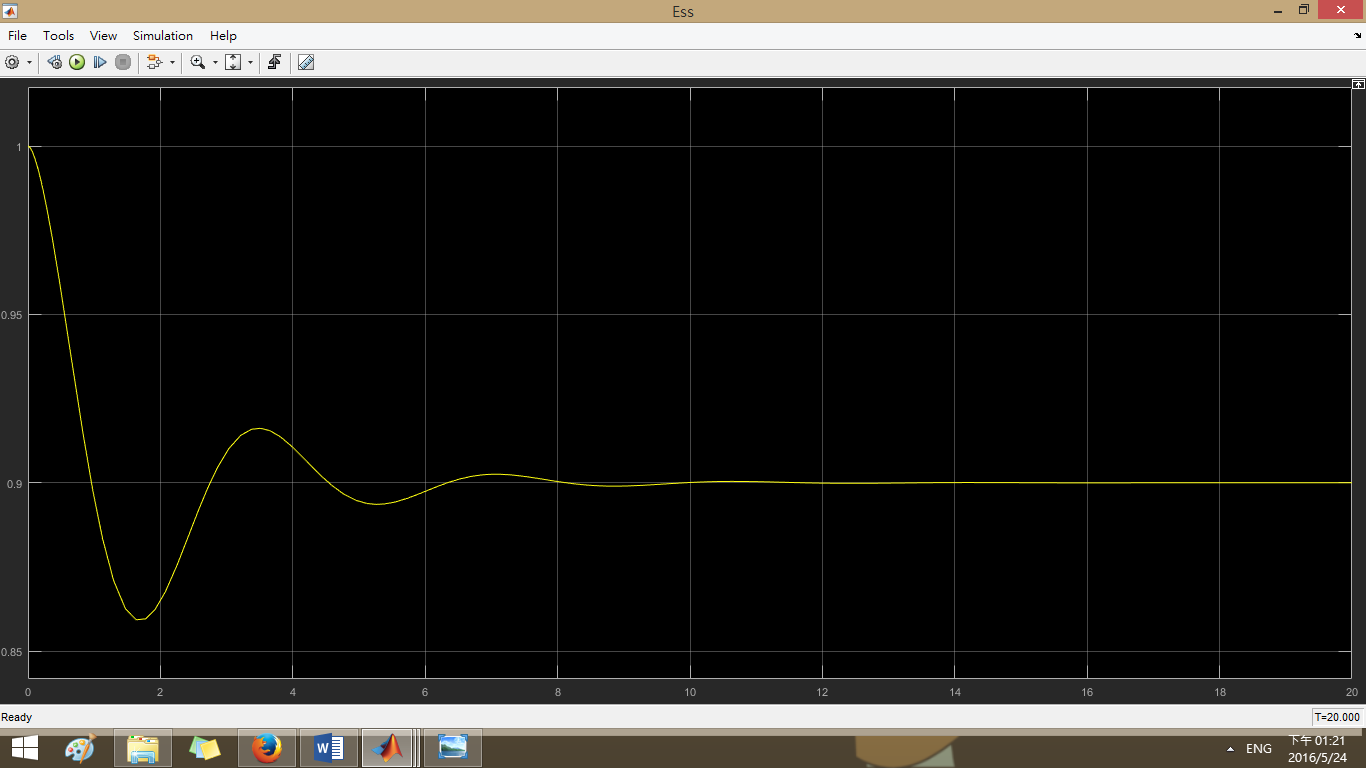


Original

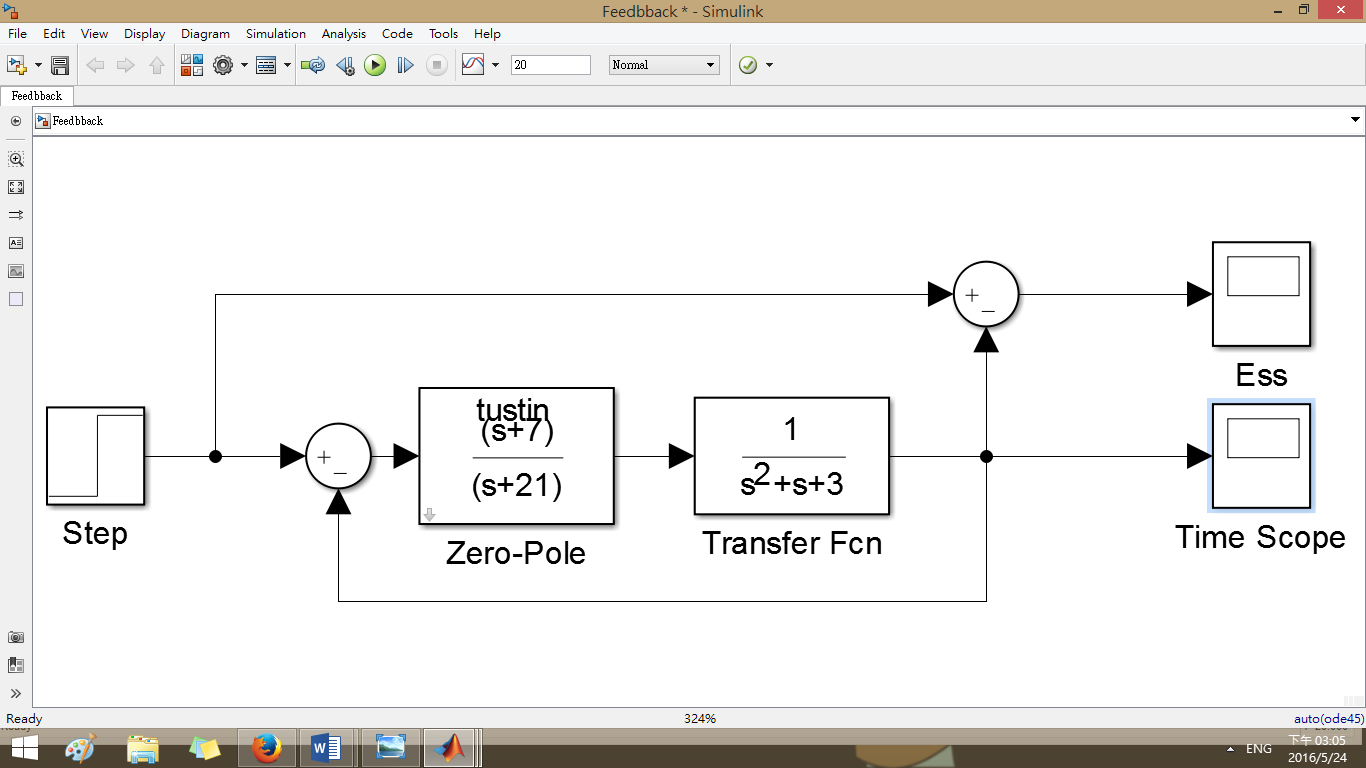
Time-response



Error

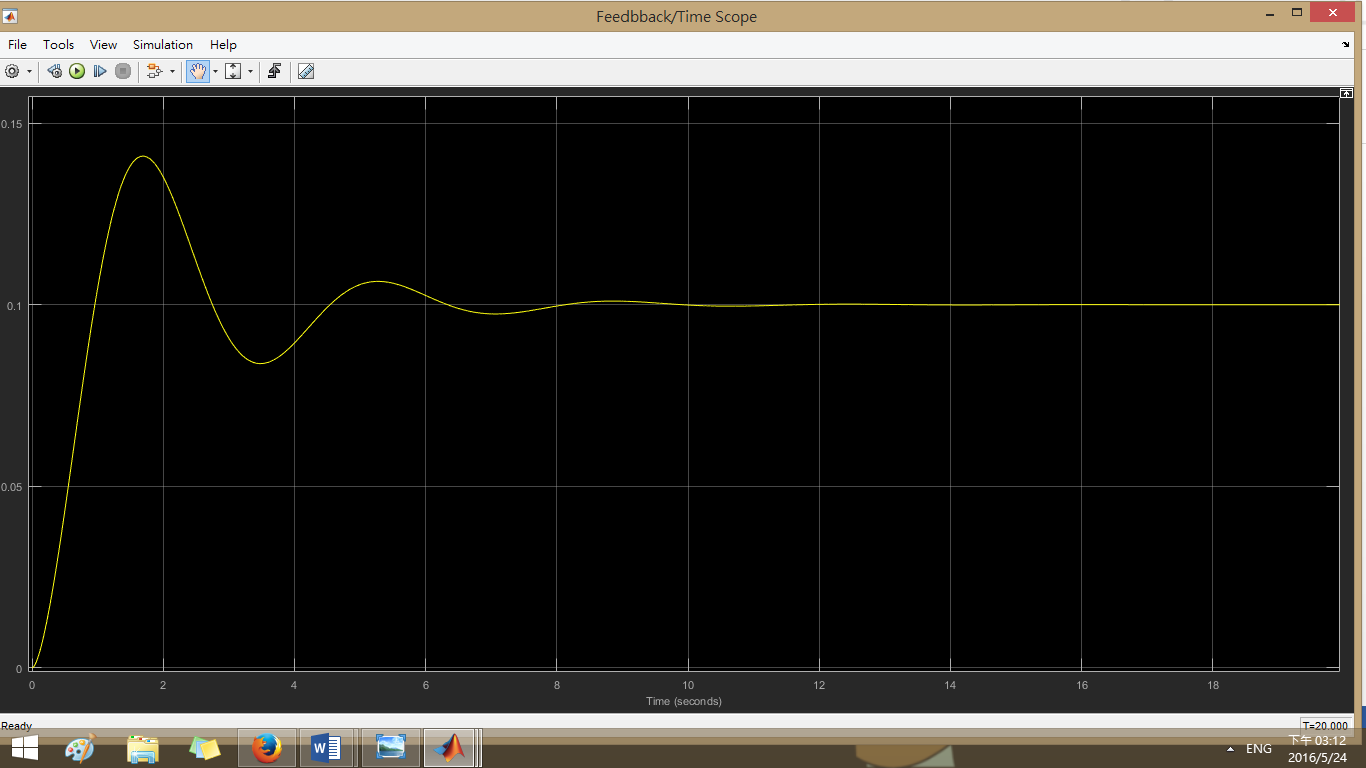


Tustin

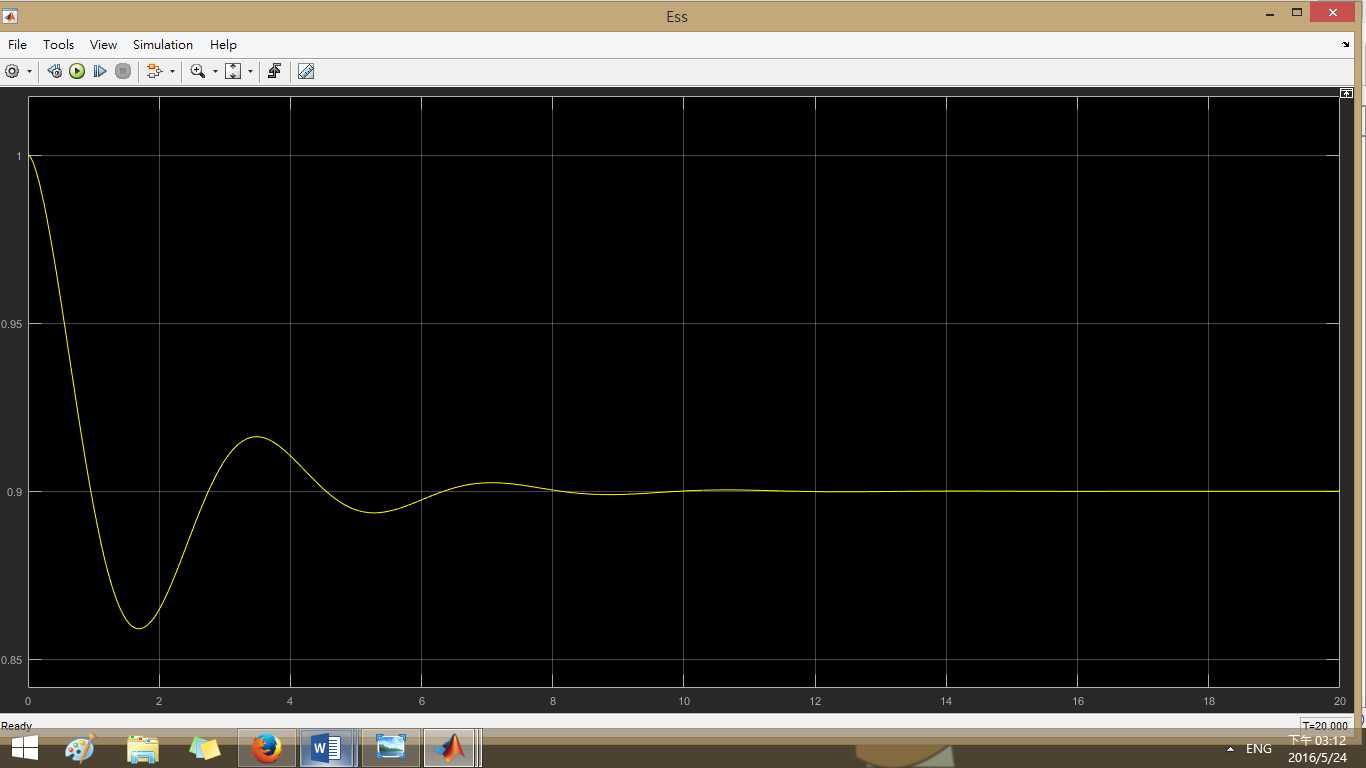


Tsample:0.001

Time-response

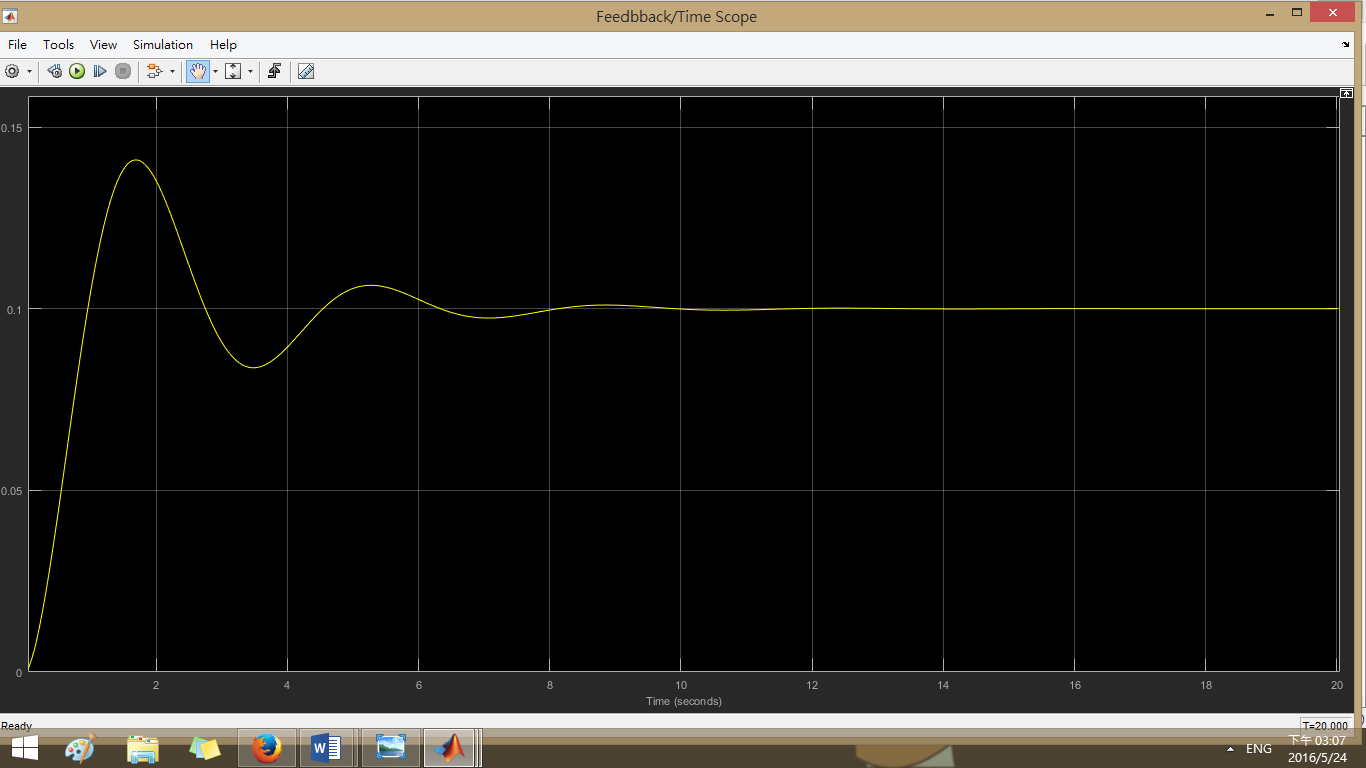


Error

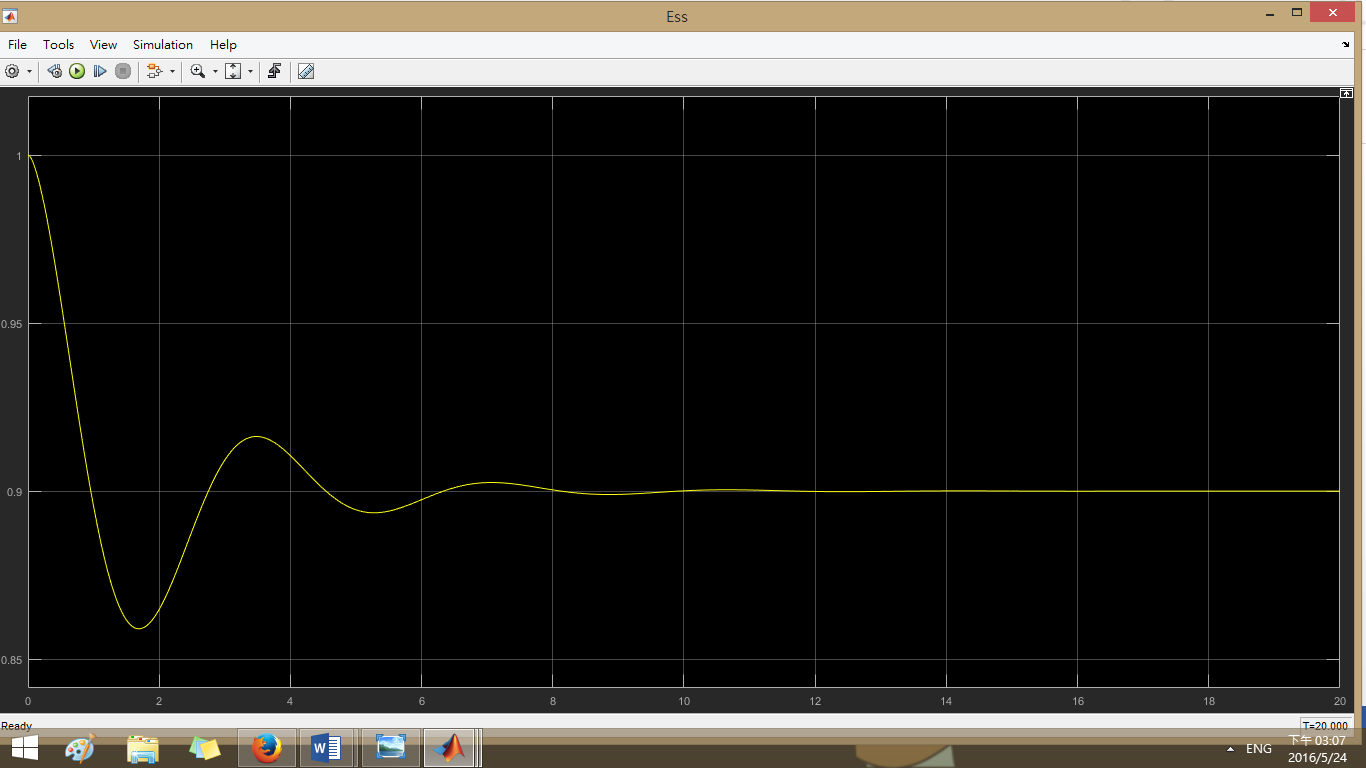


Tsample:0.01

Time-response

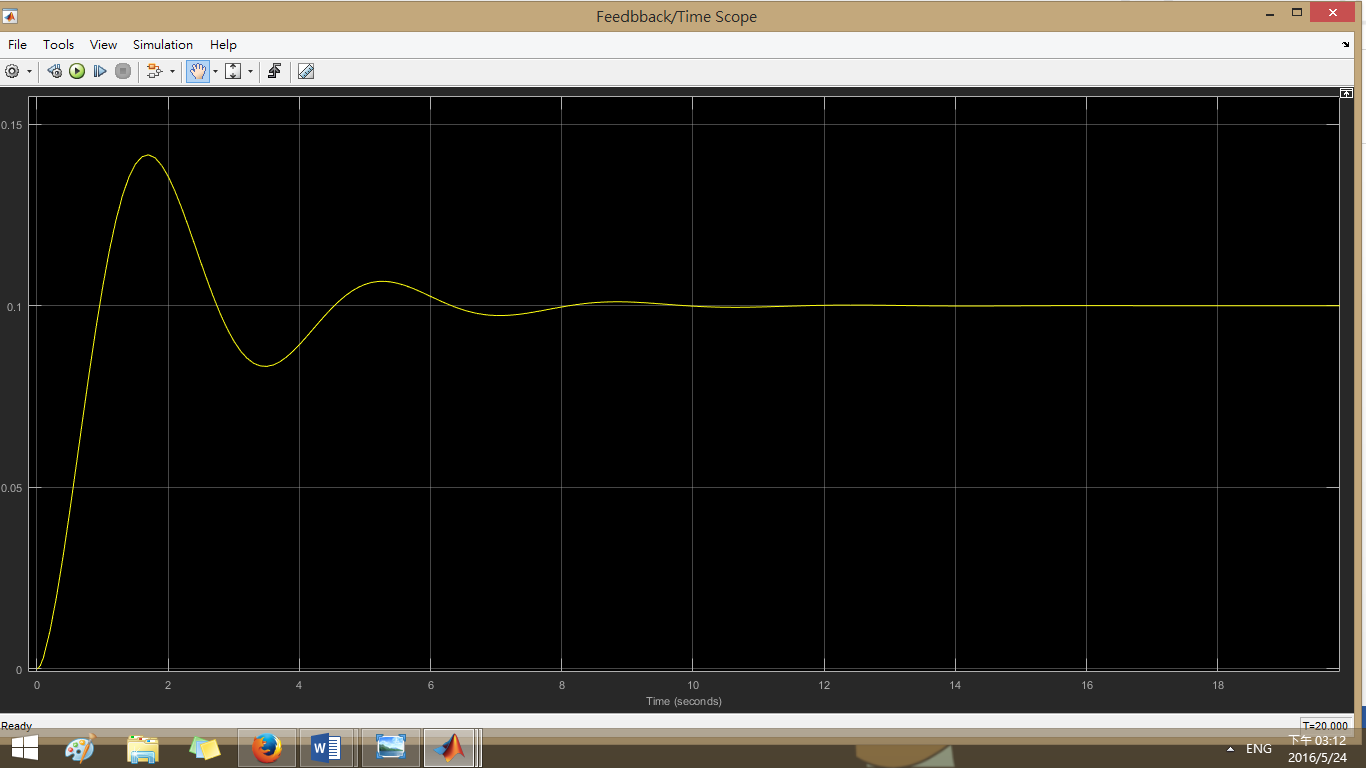


Error

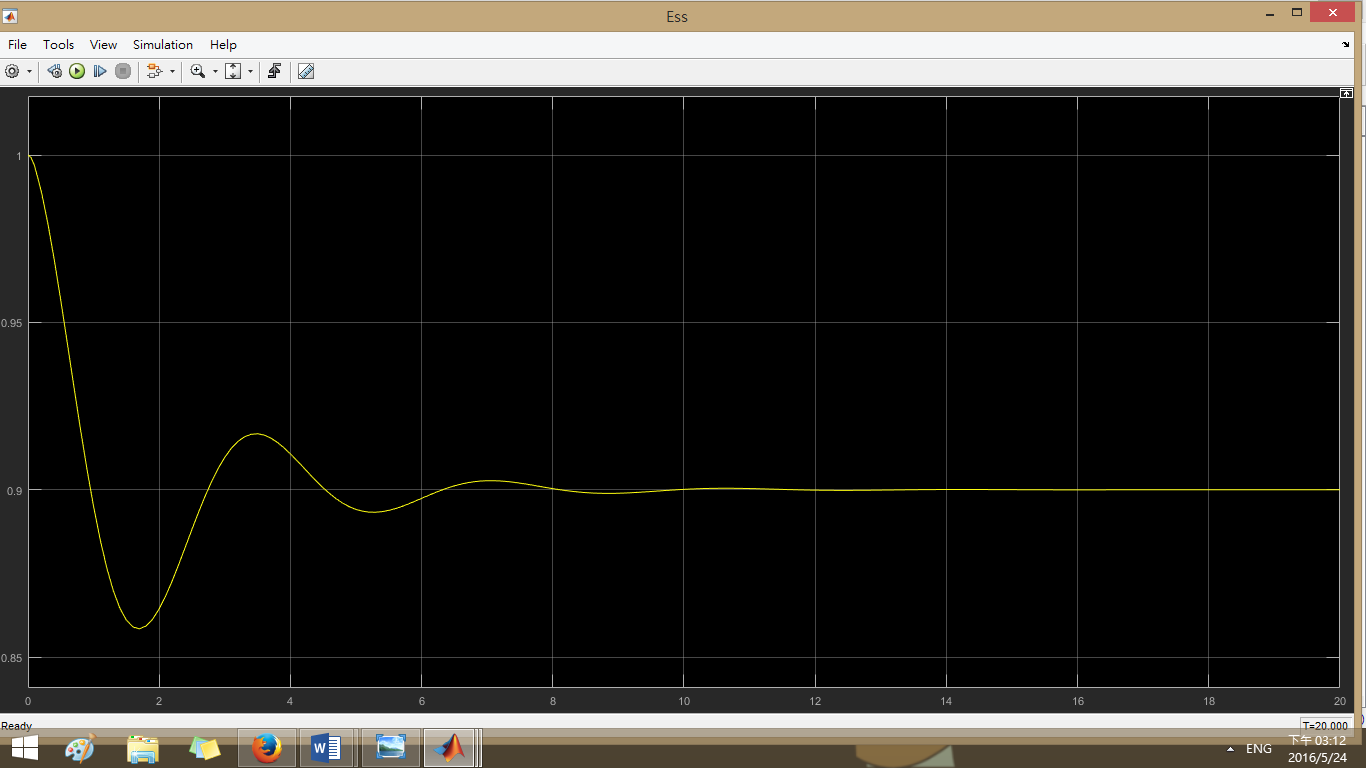


Tsample:0.1

Time-response

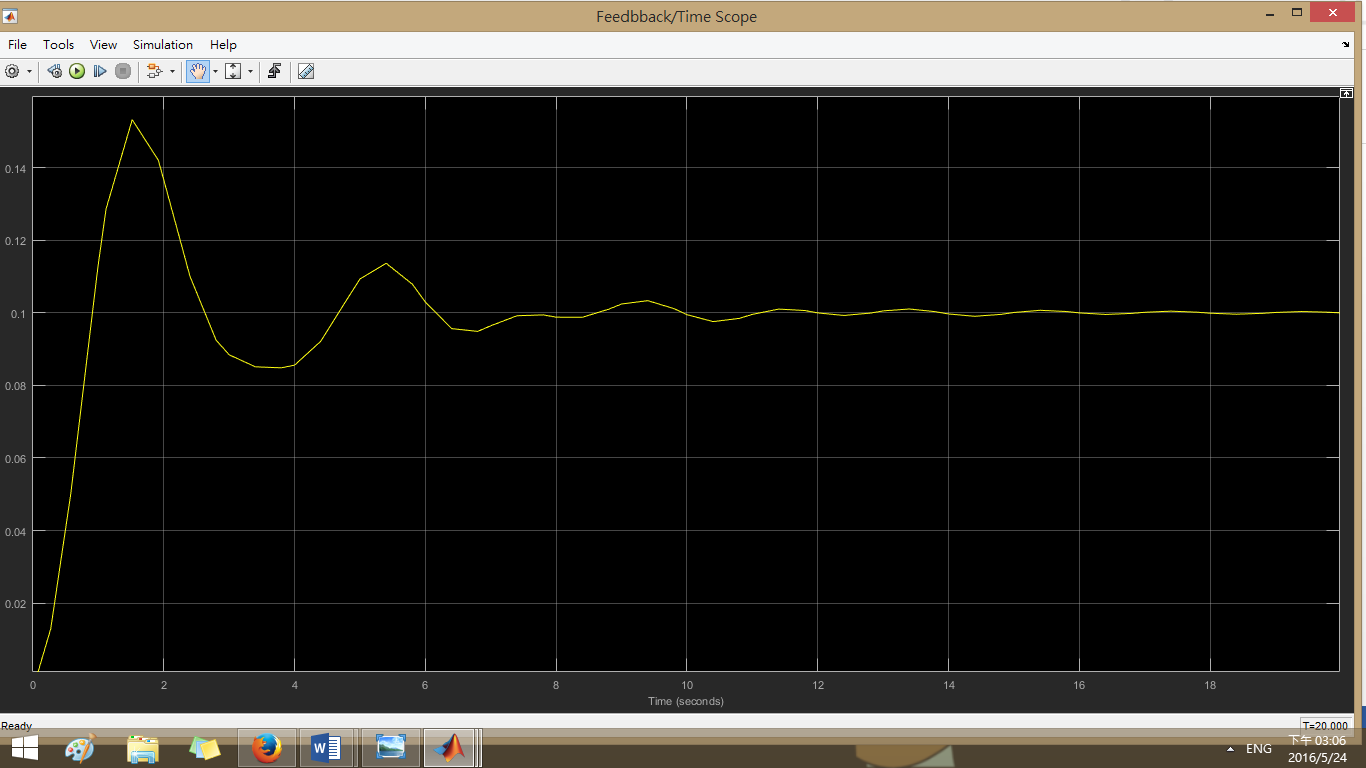


Error

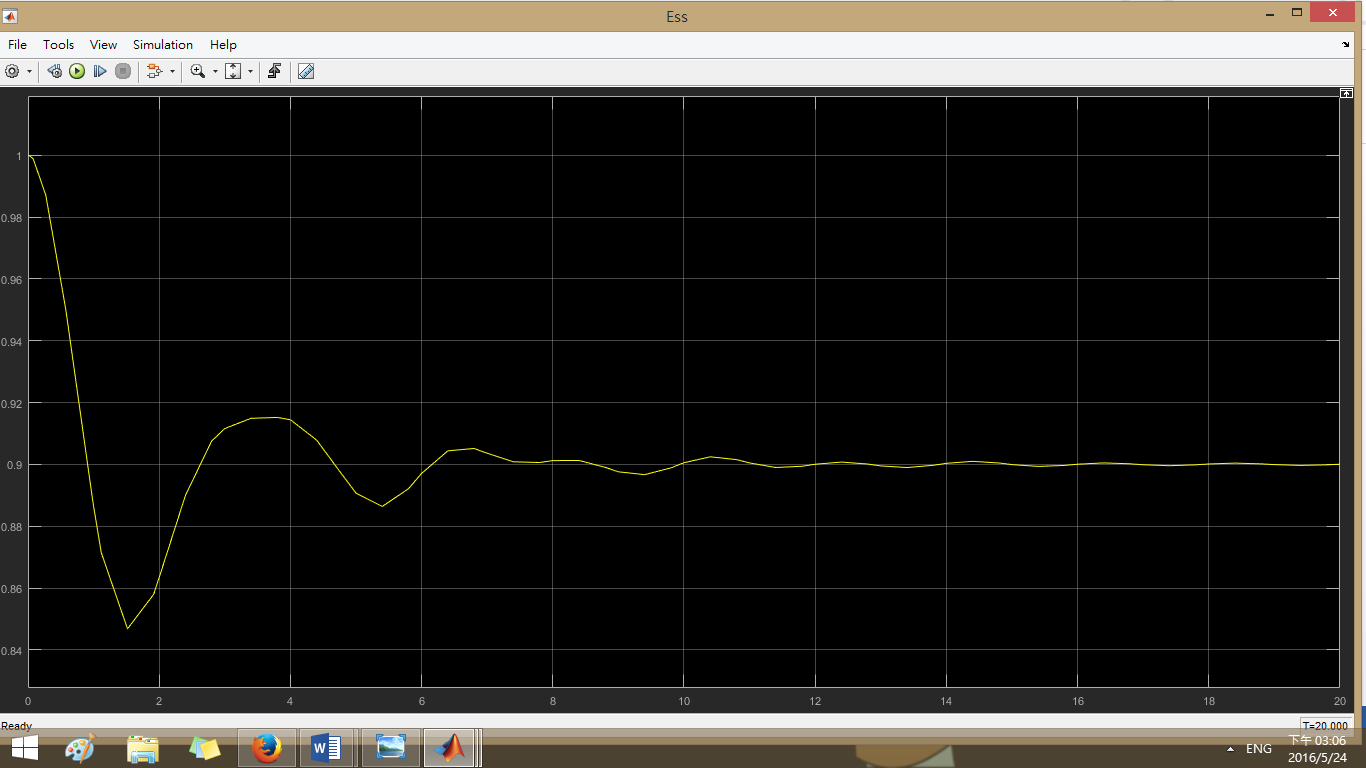


Tsample:1

Time-response

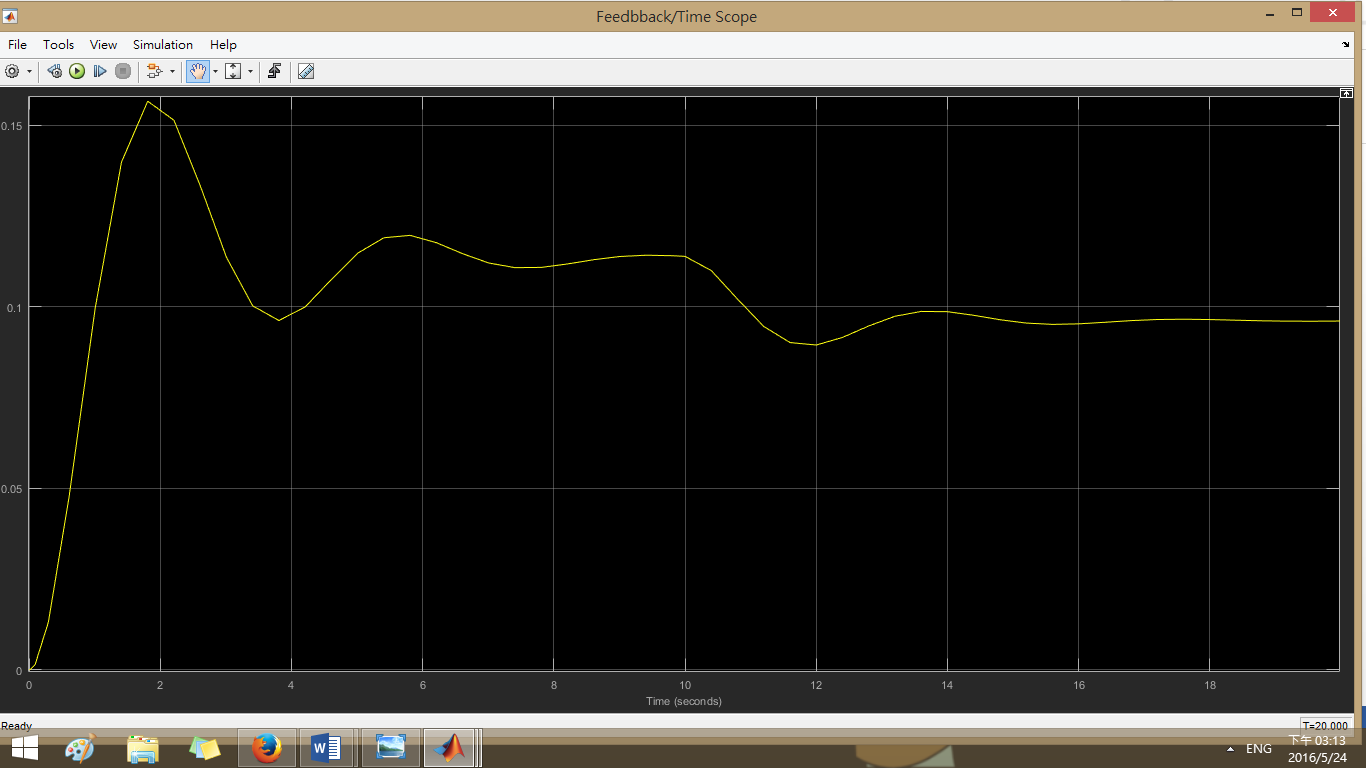


Error

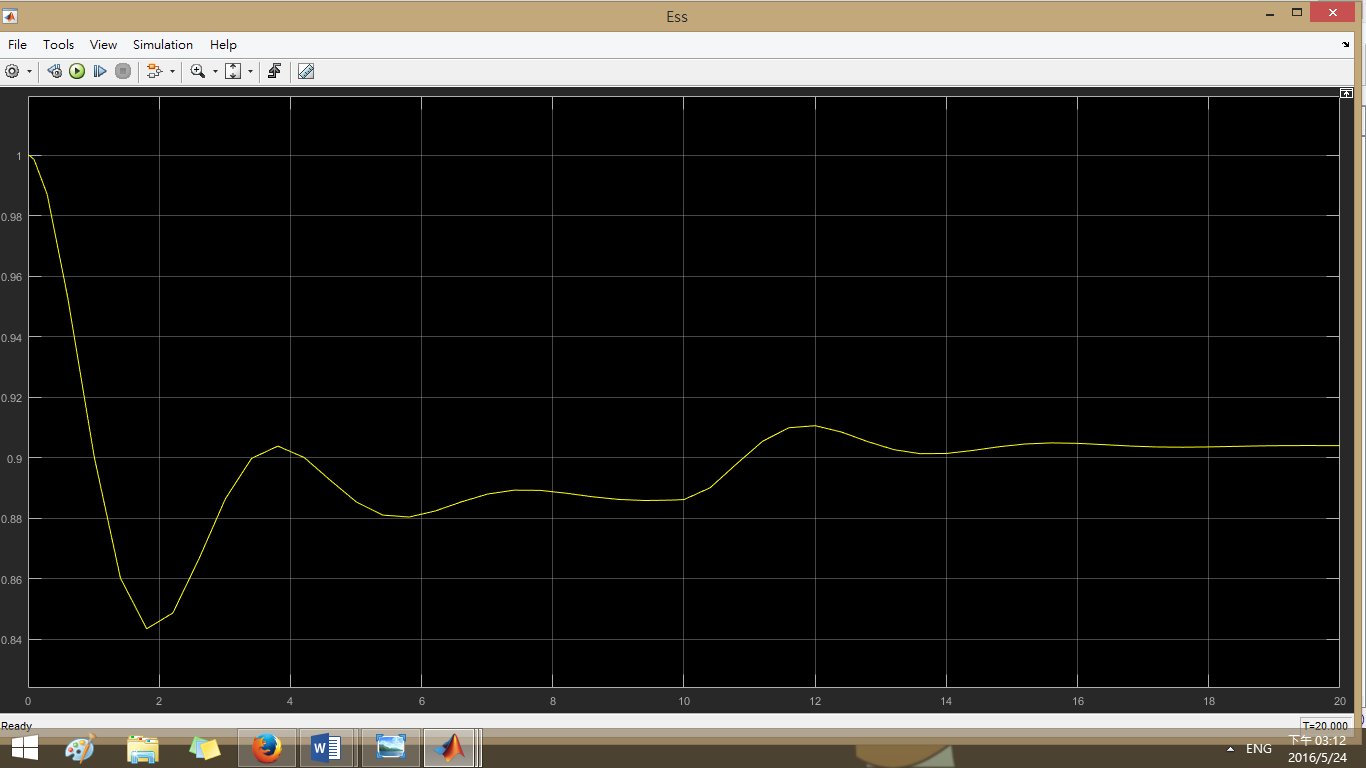


Tsample:10

Time-response



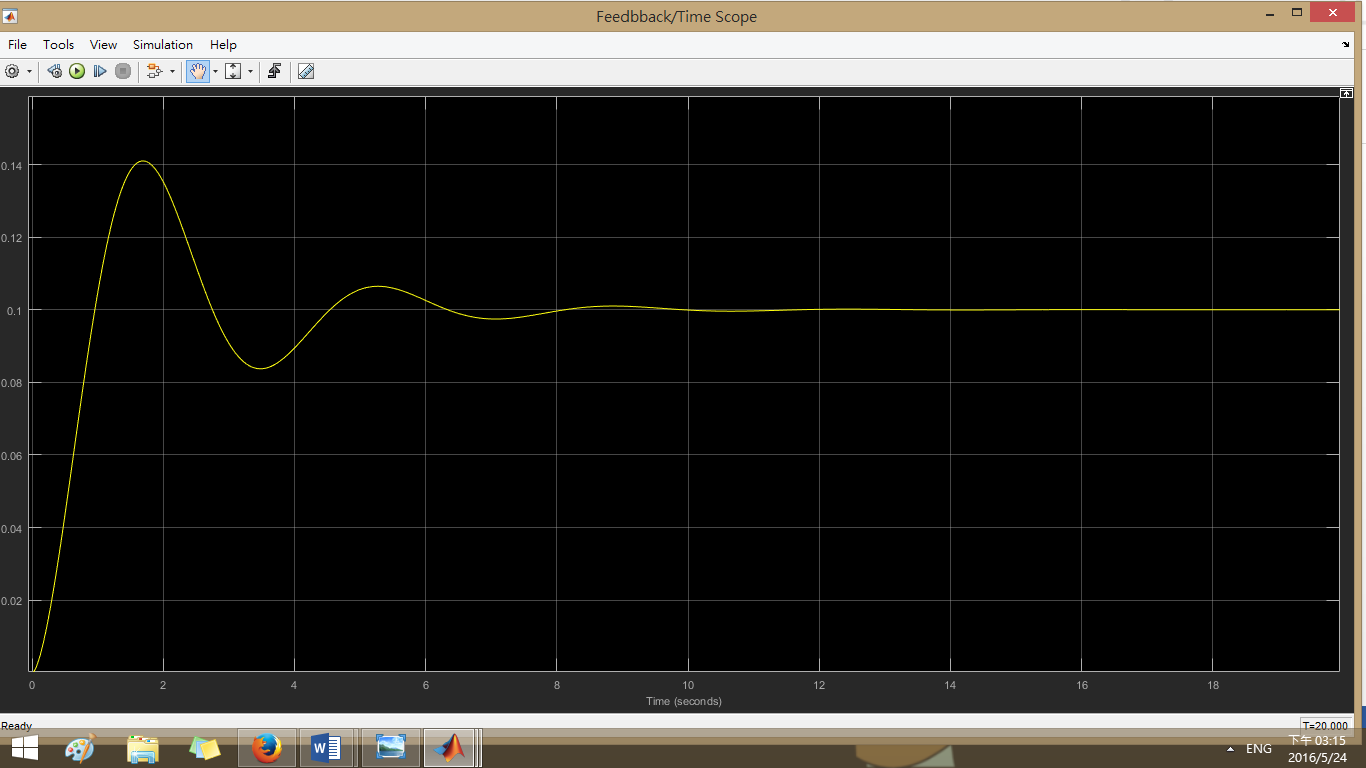
Error



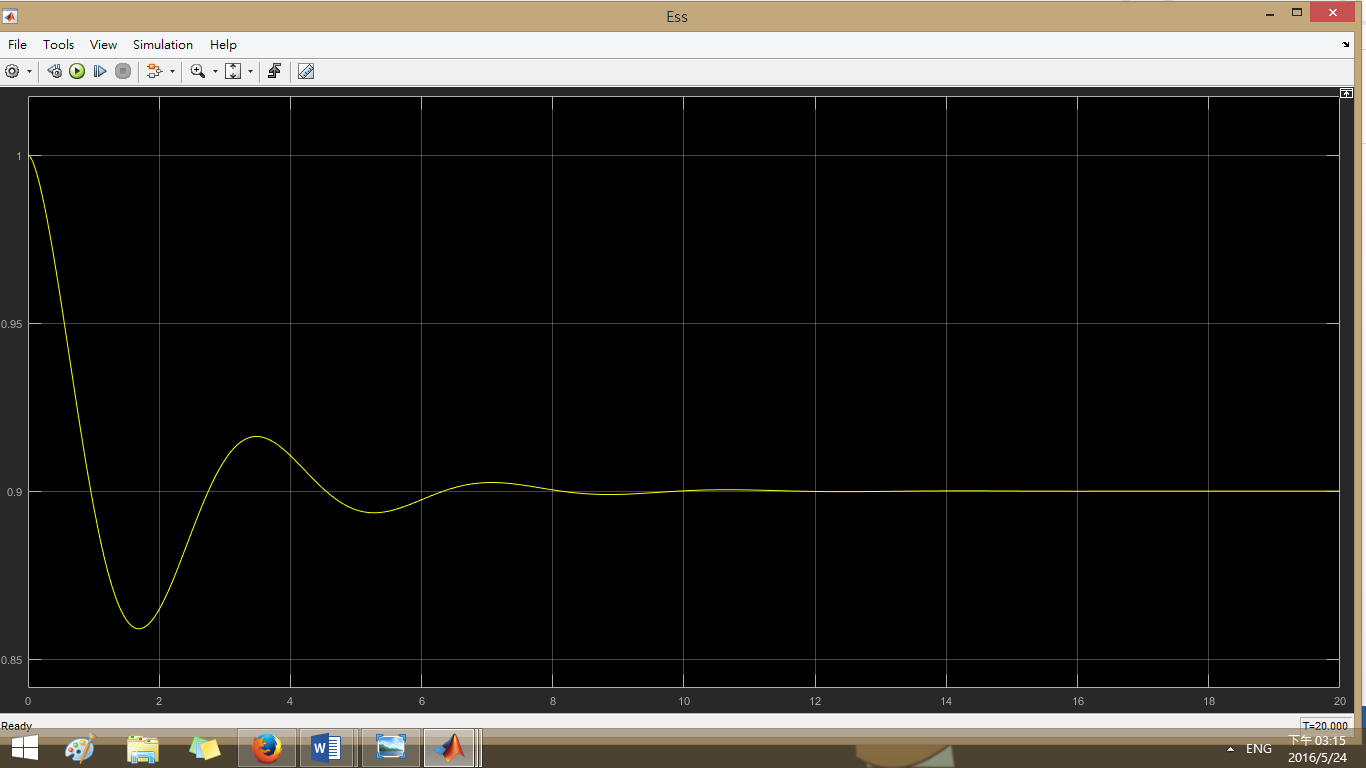
MPZ

Tsample:0.01

Time-response

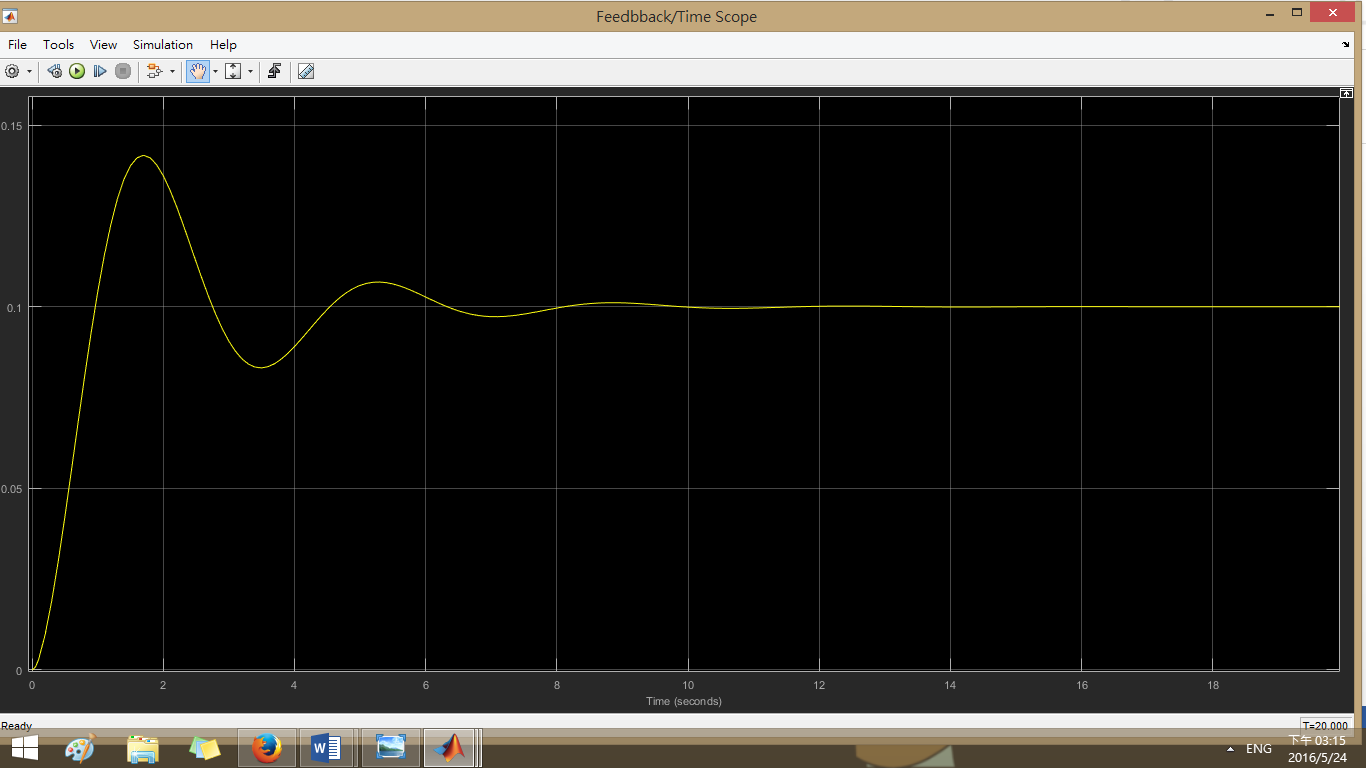


Error

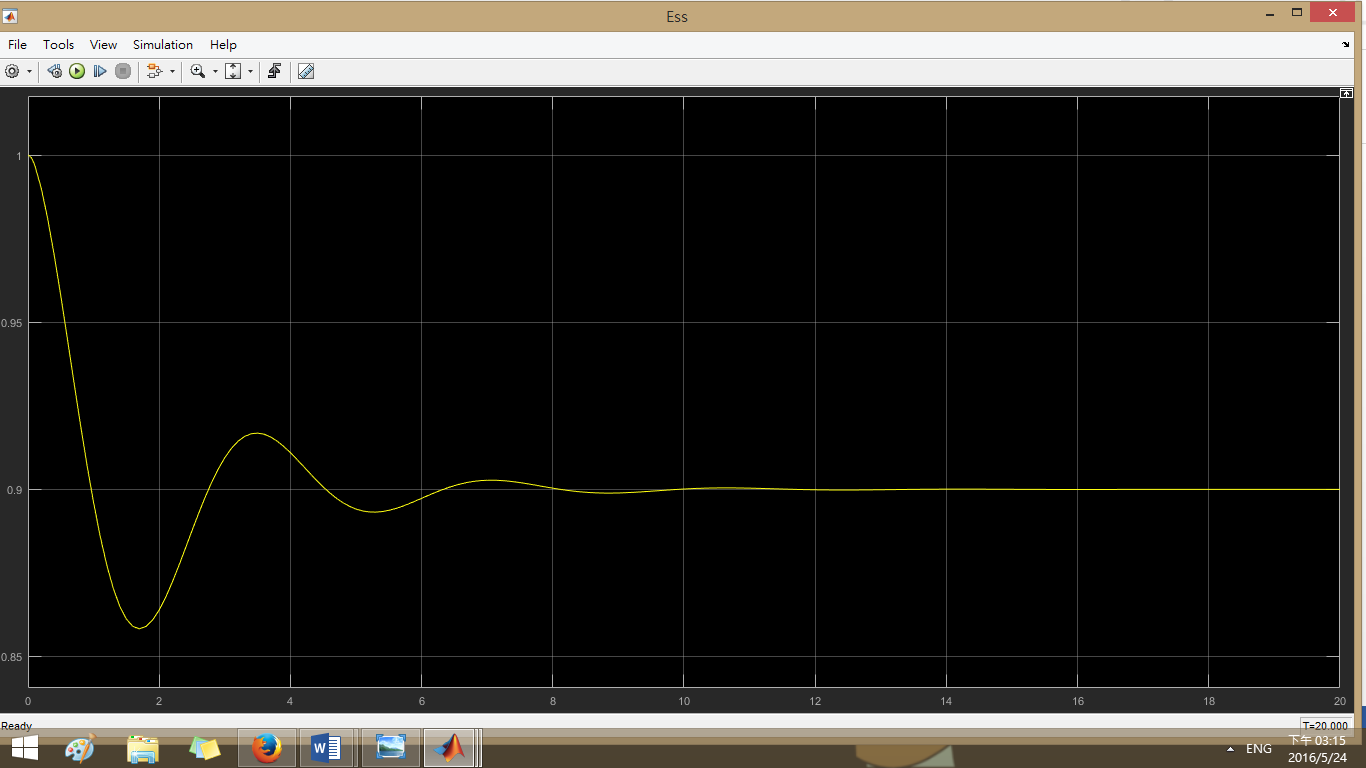


Tsample:0.1

Time-response

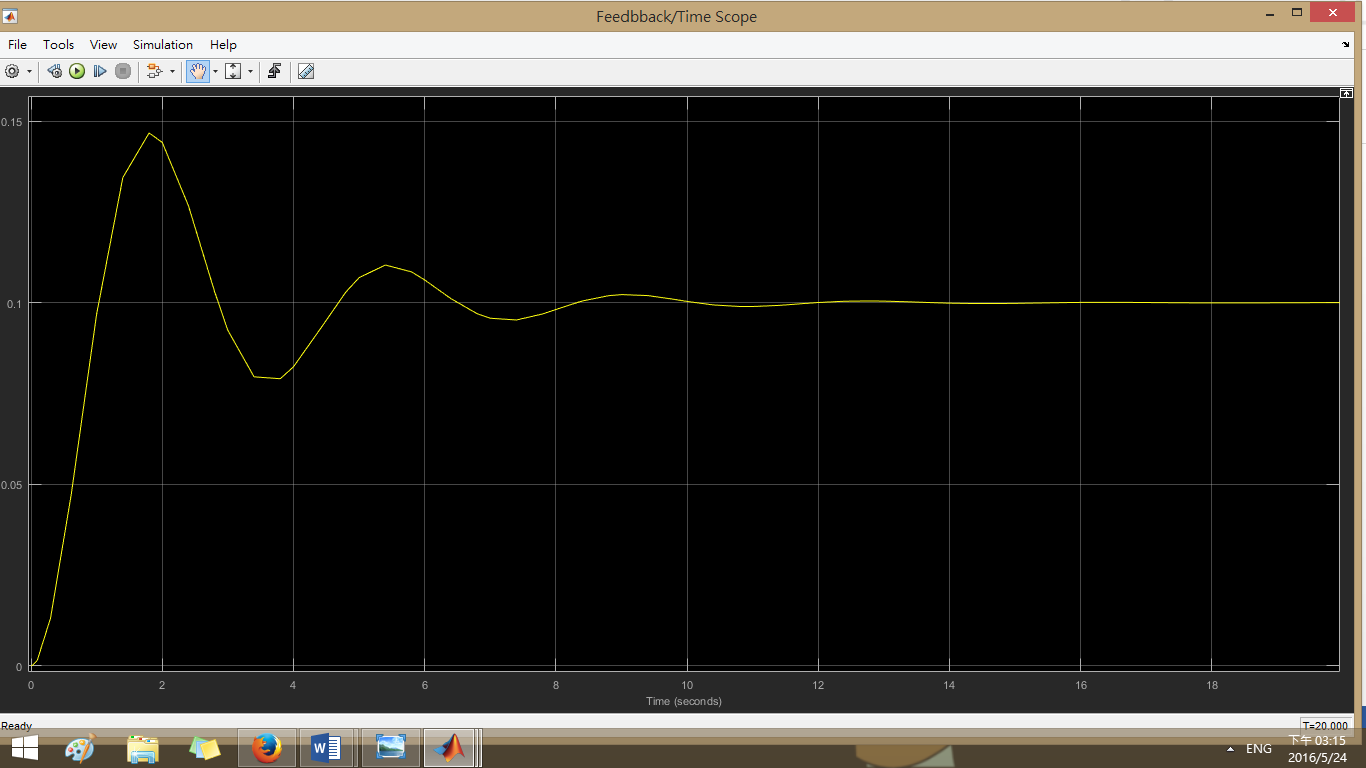


Error

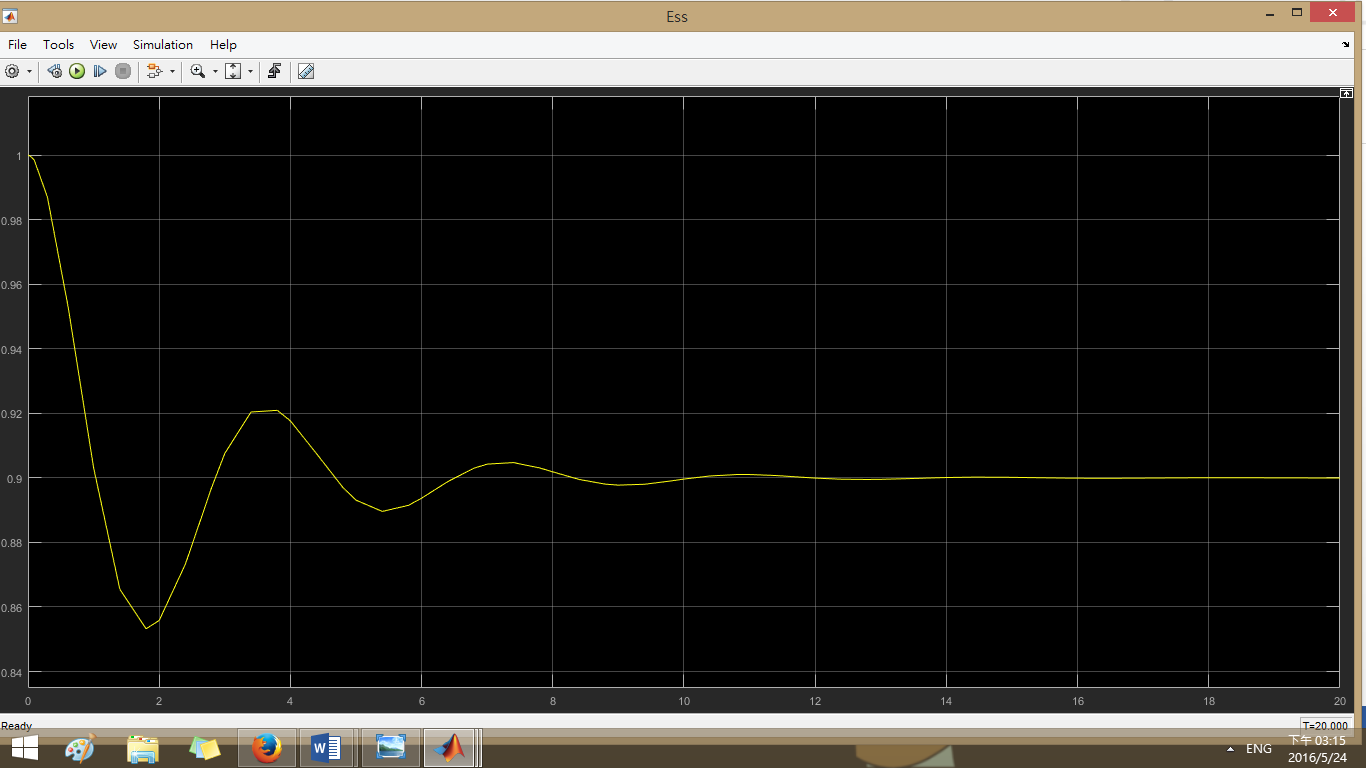


Tsample:1

Time-response

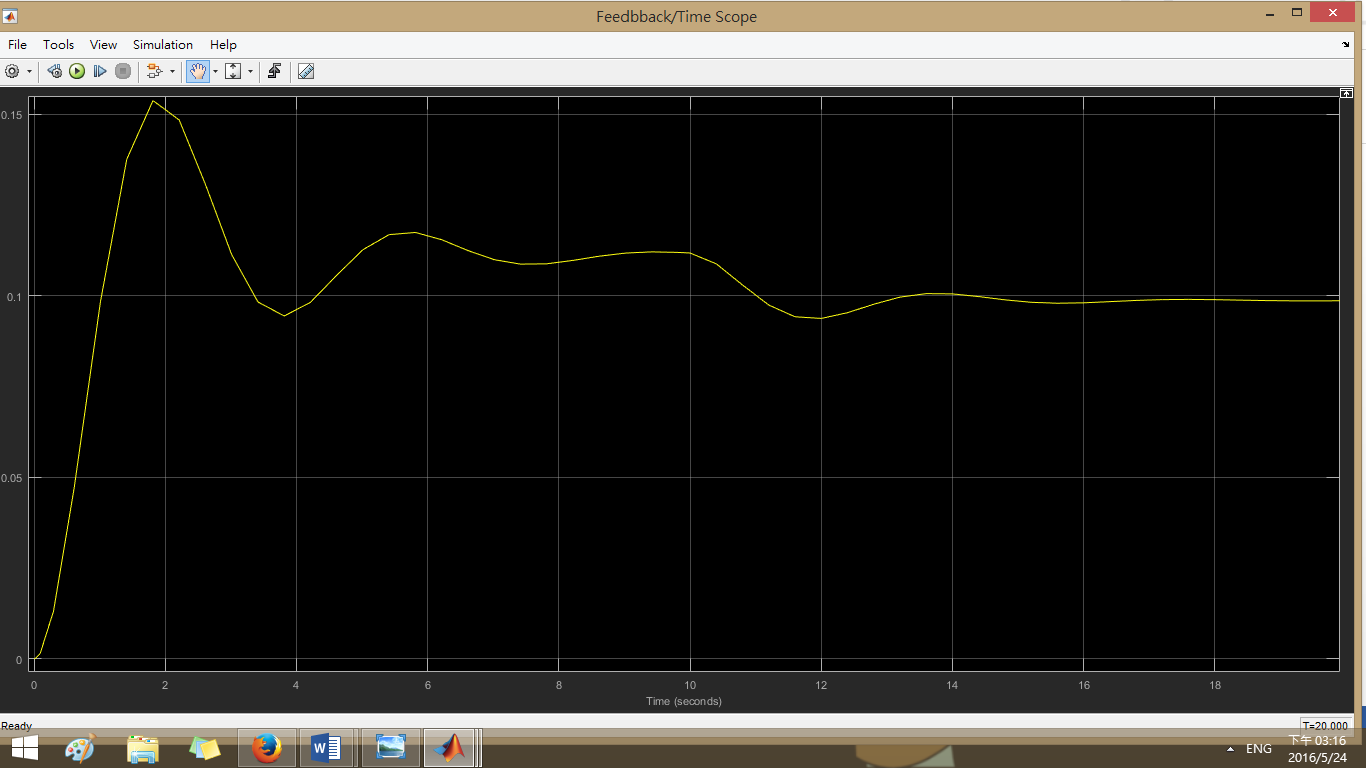


Error

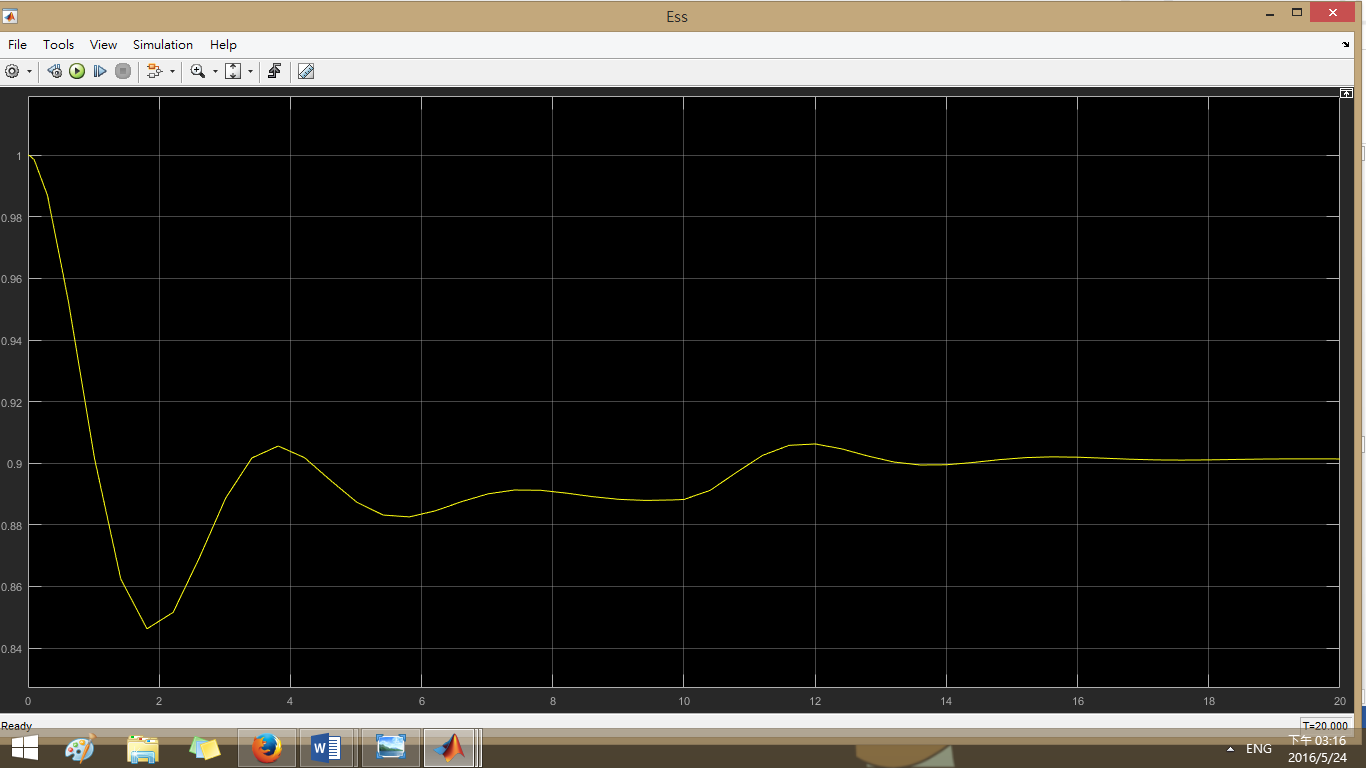


Tsample:10

Time-response

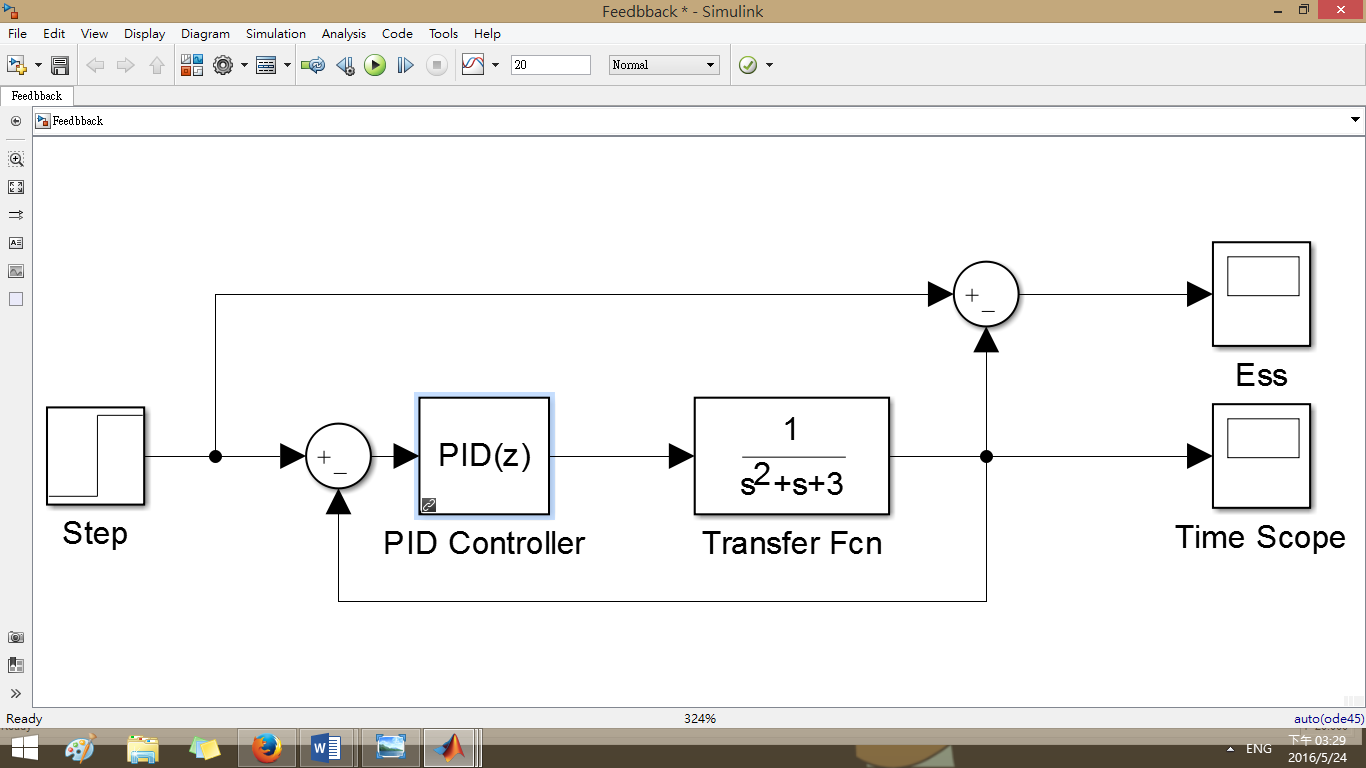


Error

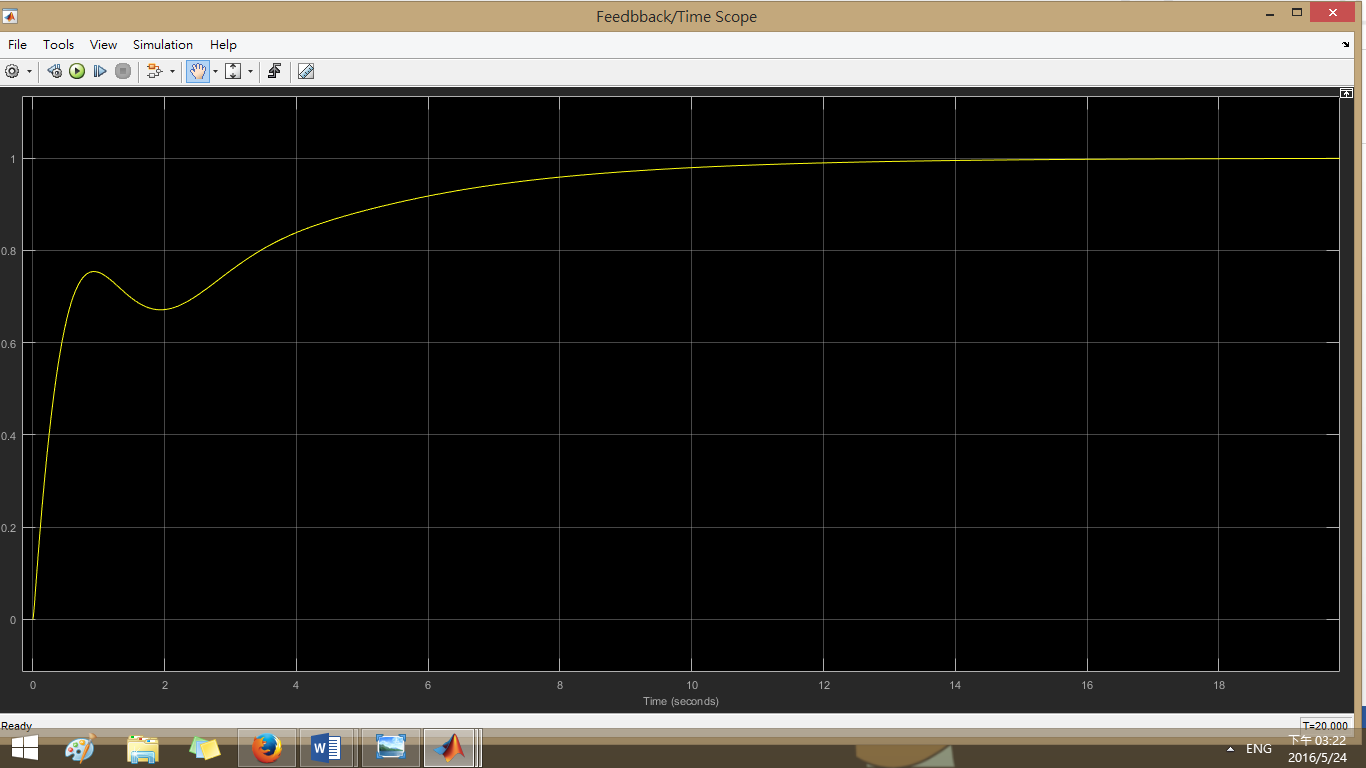


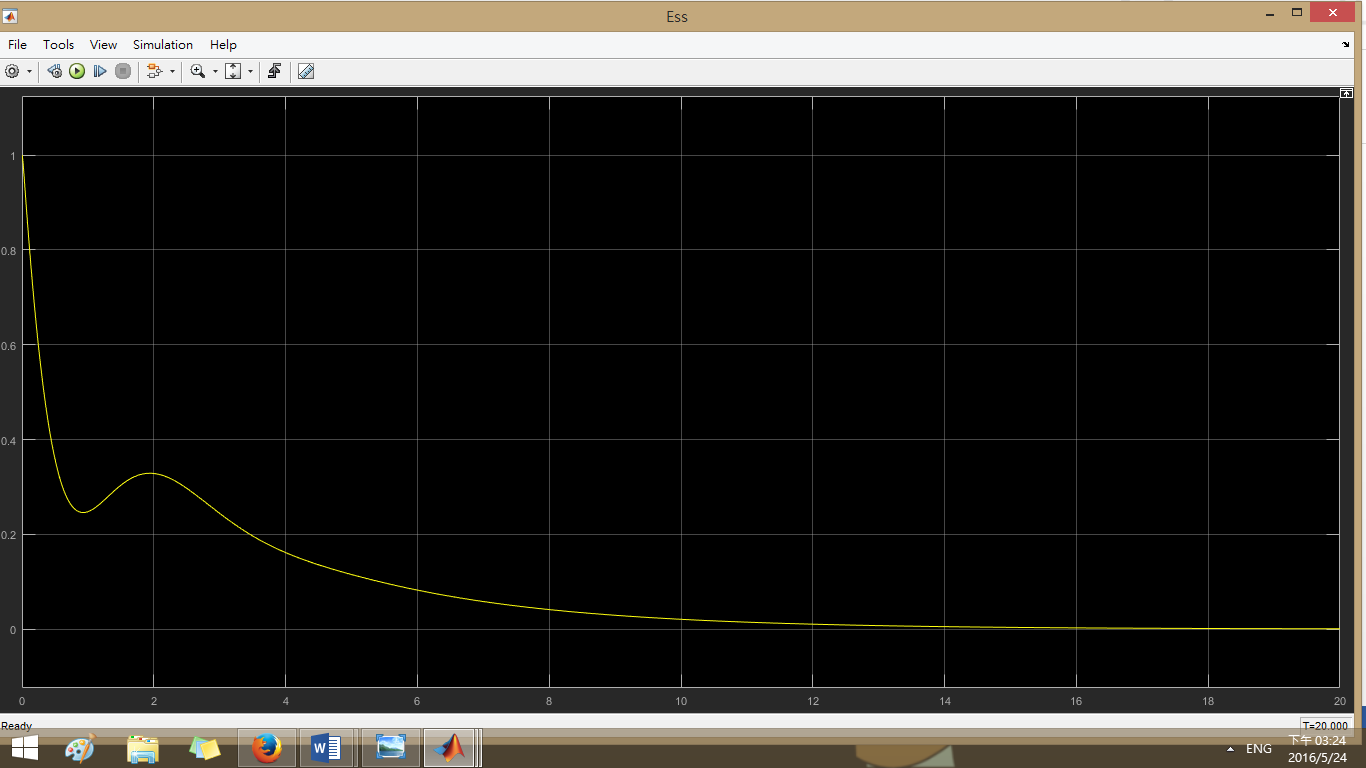
3.Free 🡪 Choose PID-control

P = 3 ,I = 1.75, D = 2

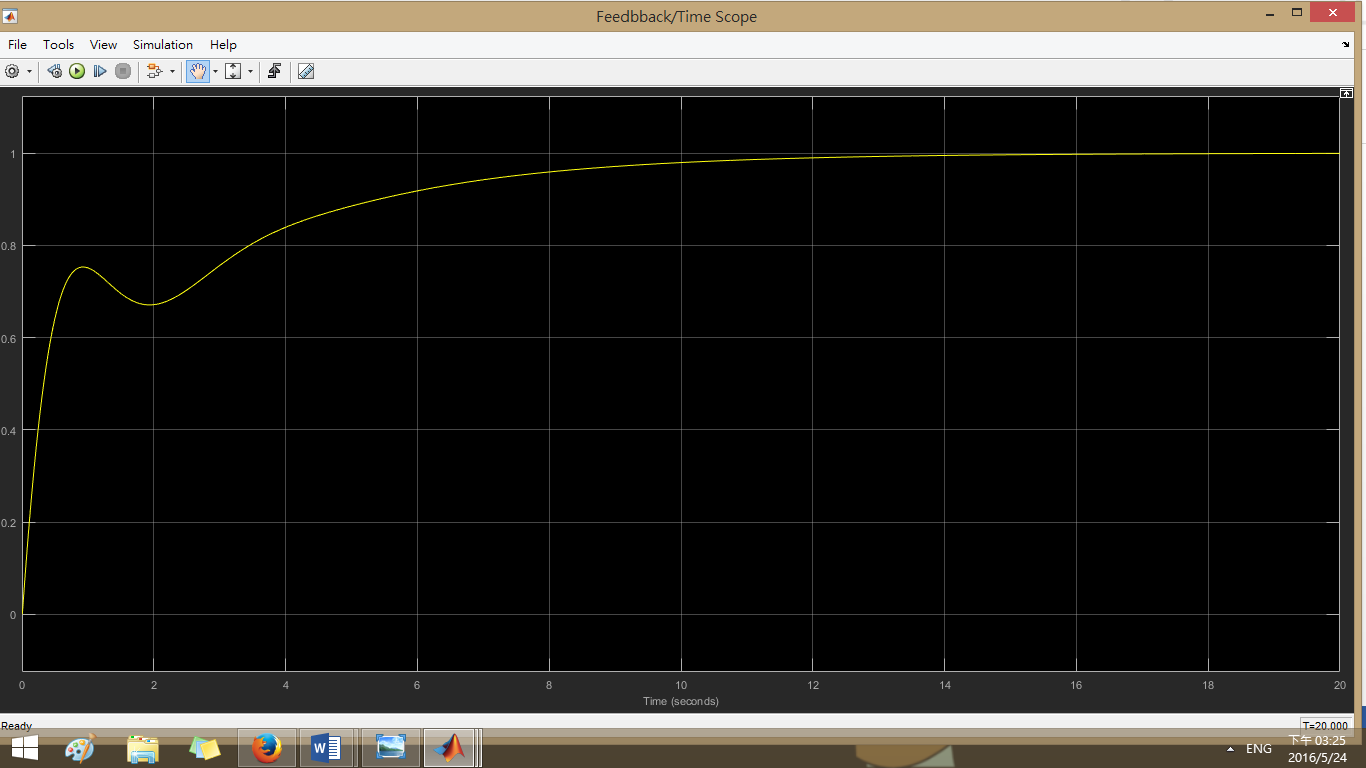


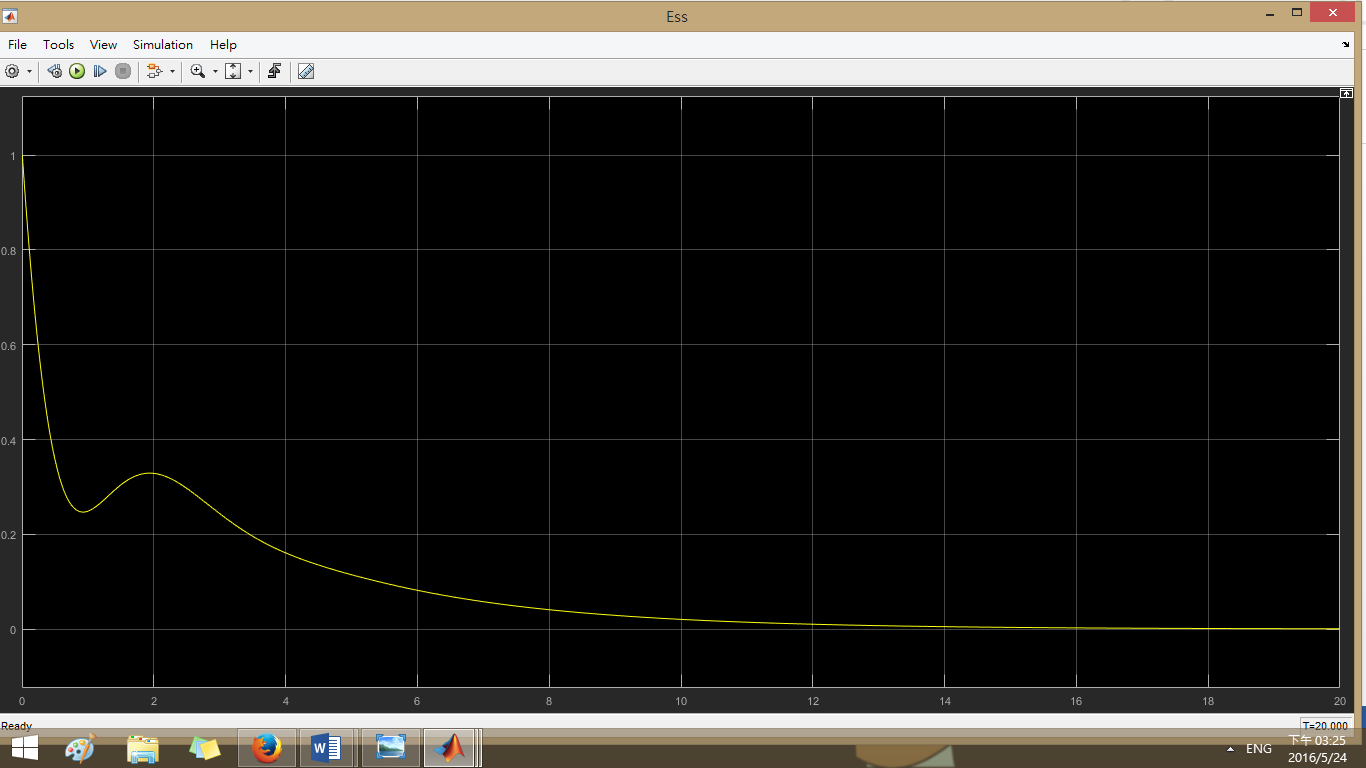
Original



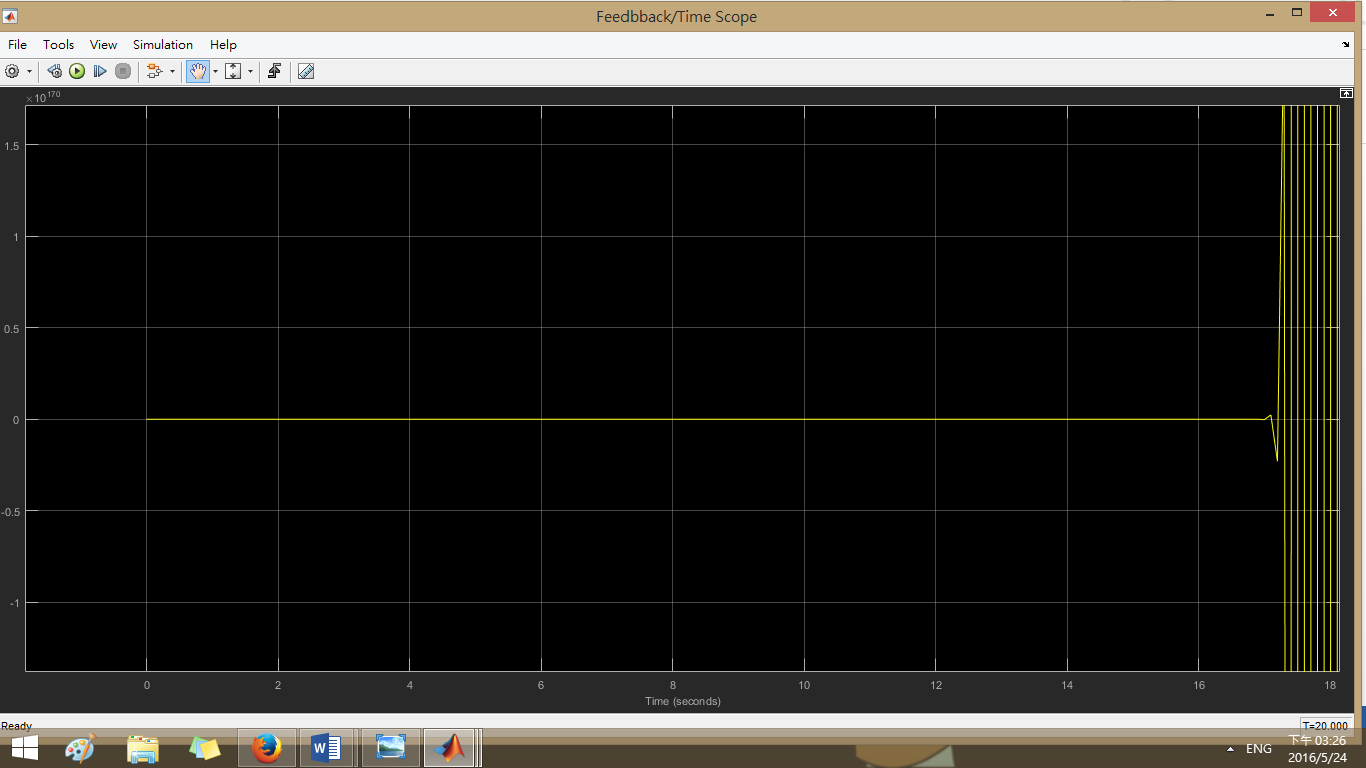


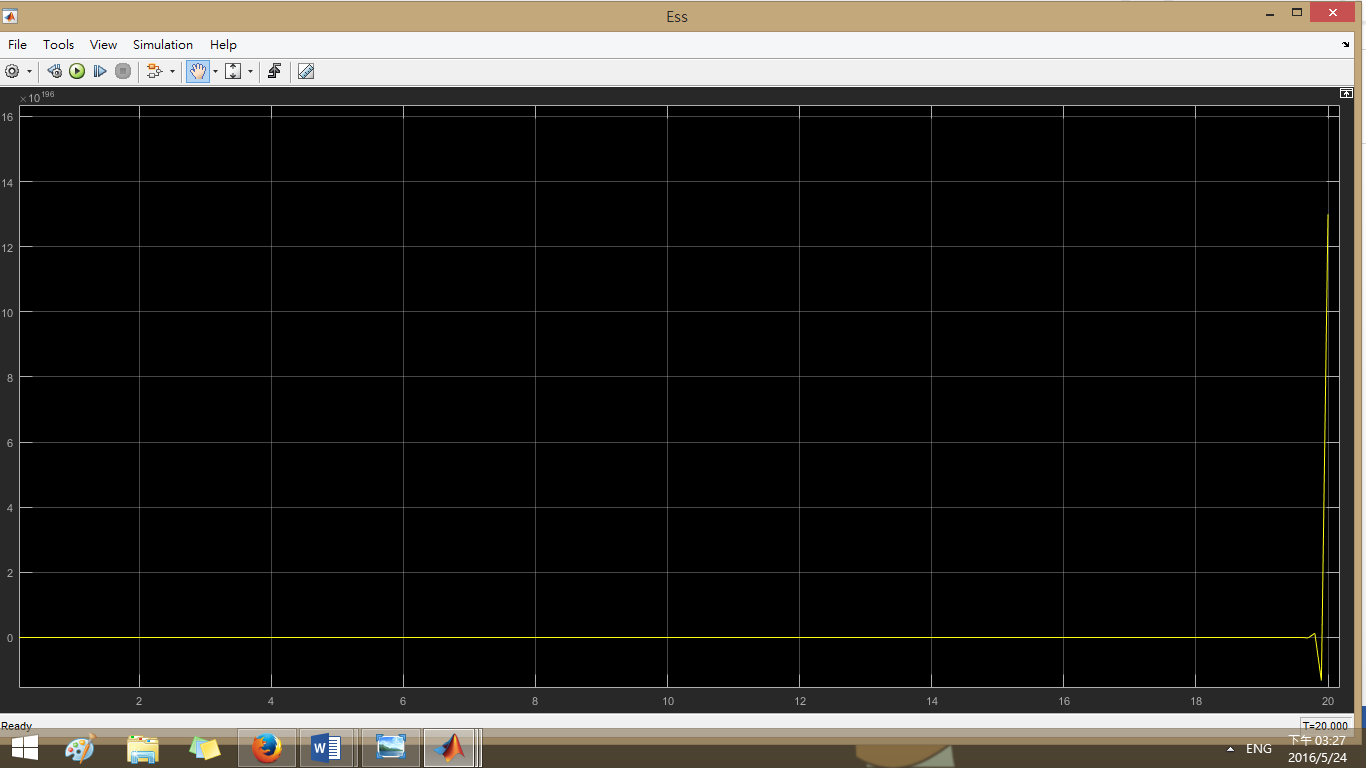
Tsample:0.01



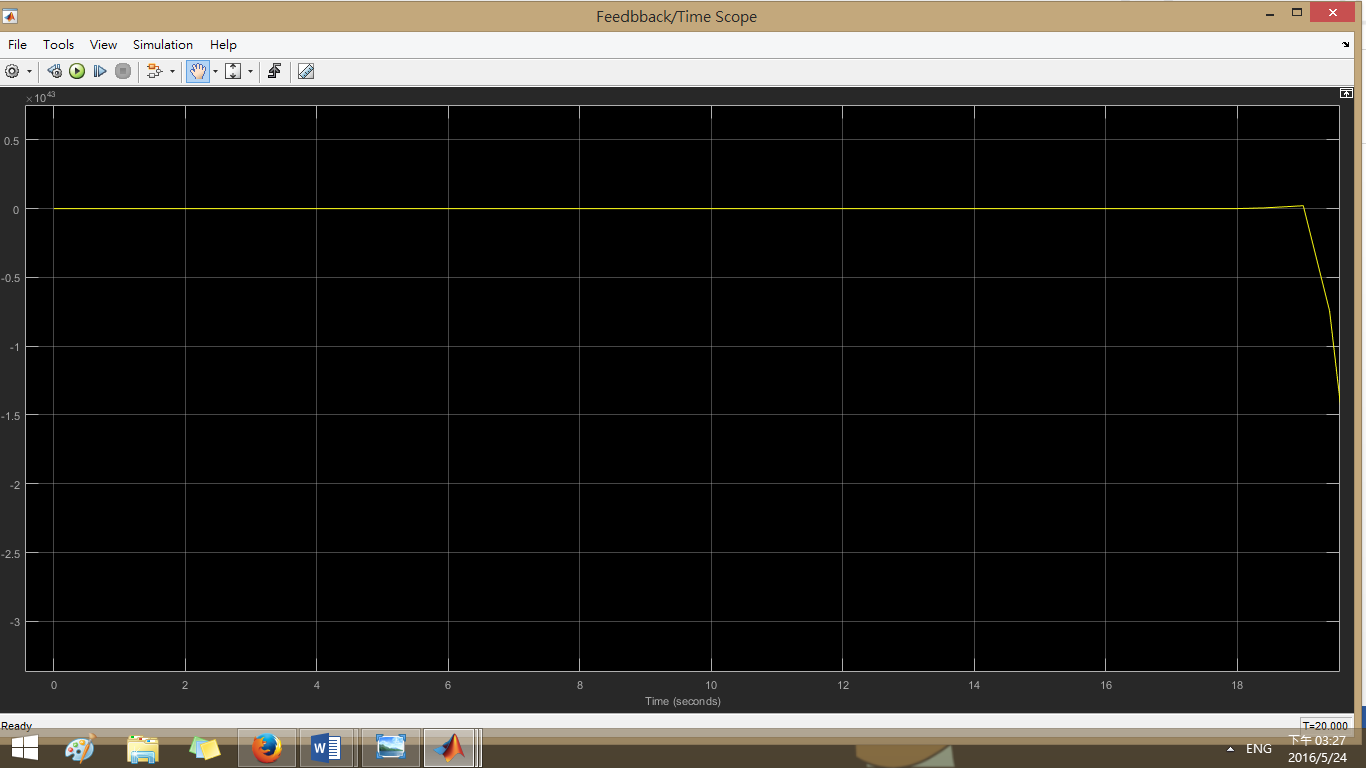


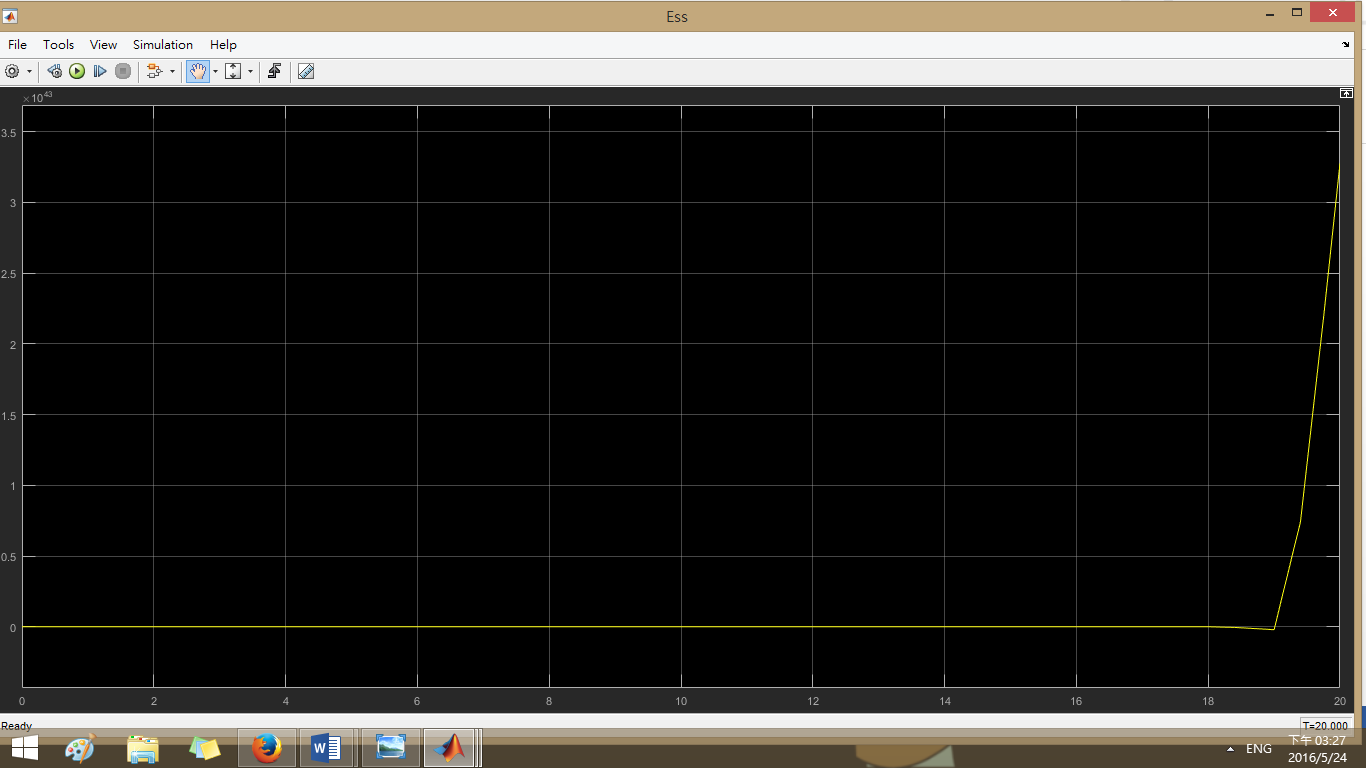
Tsample:0.1





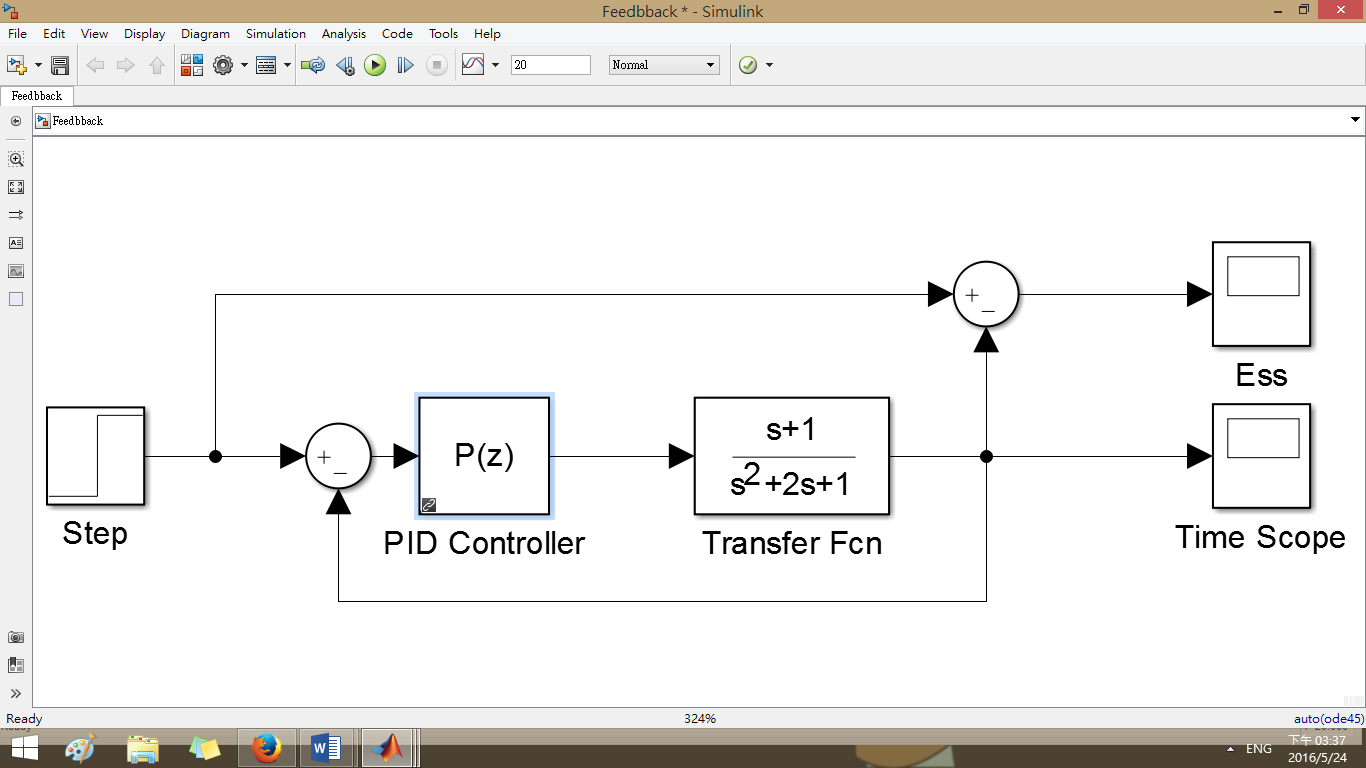
Tsample:1



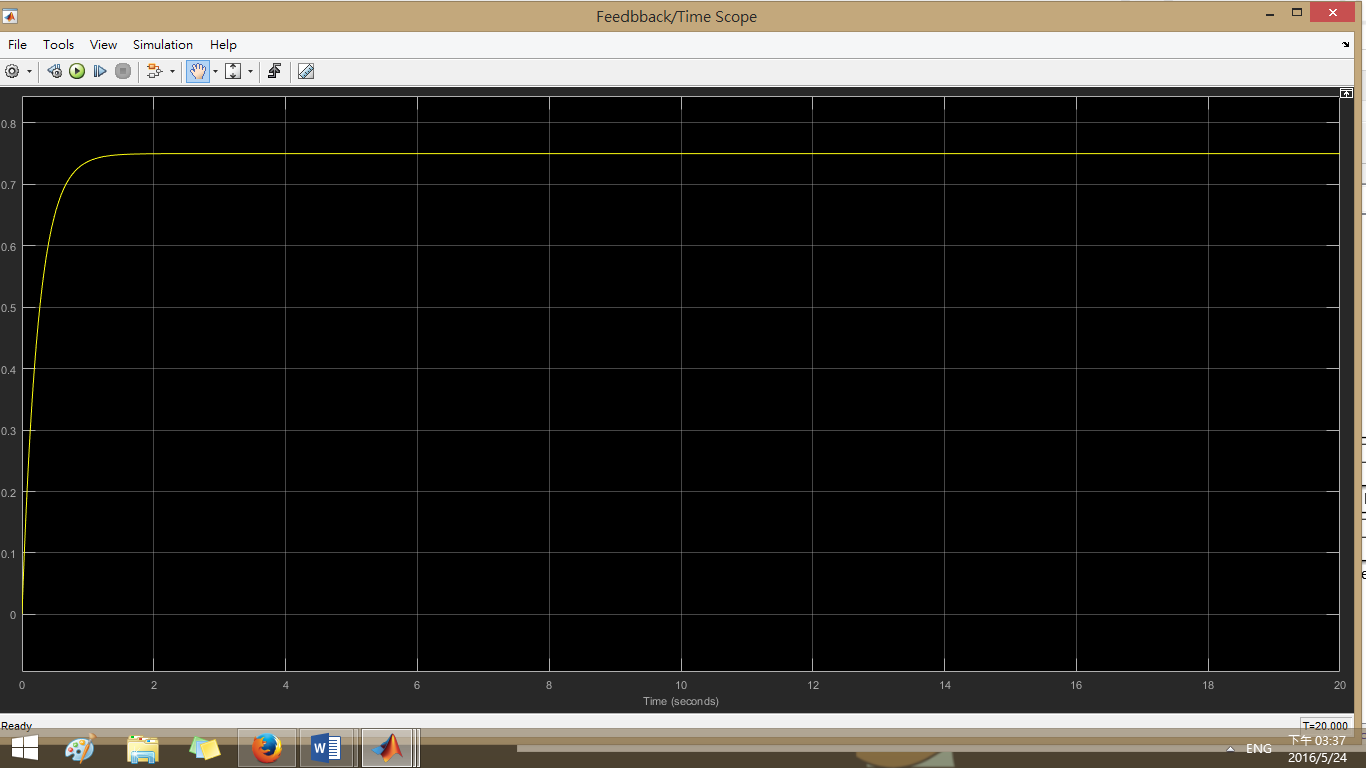


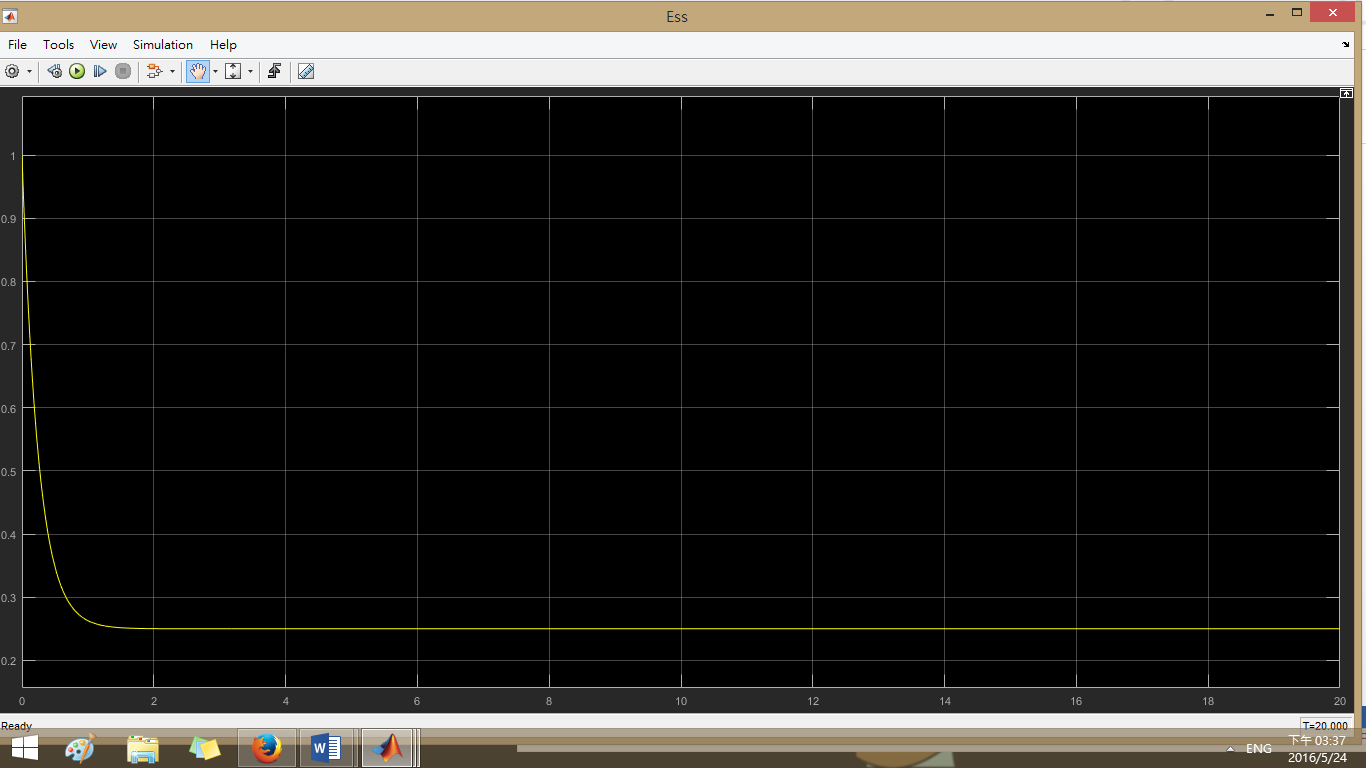
**第二題**

K = 3



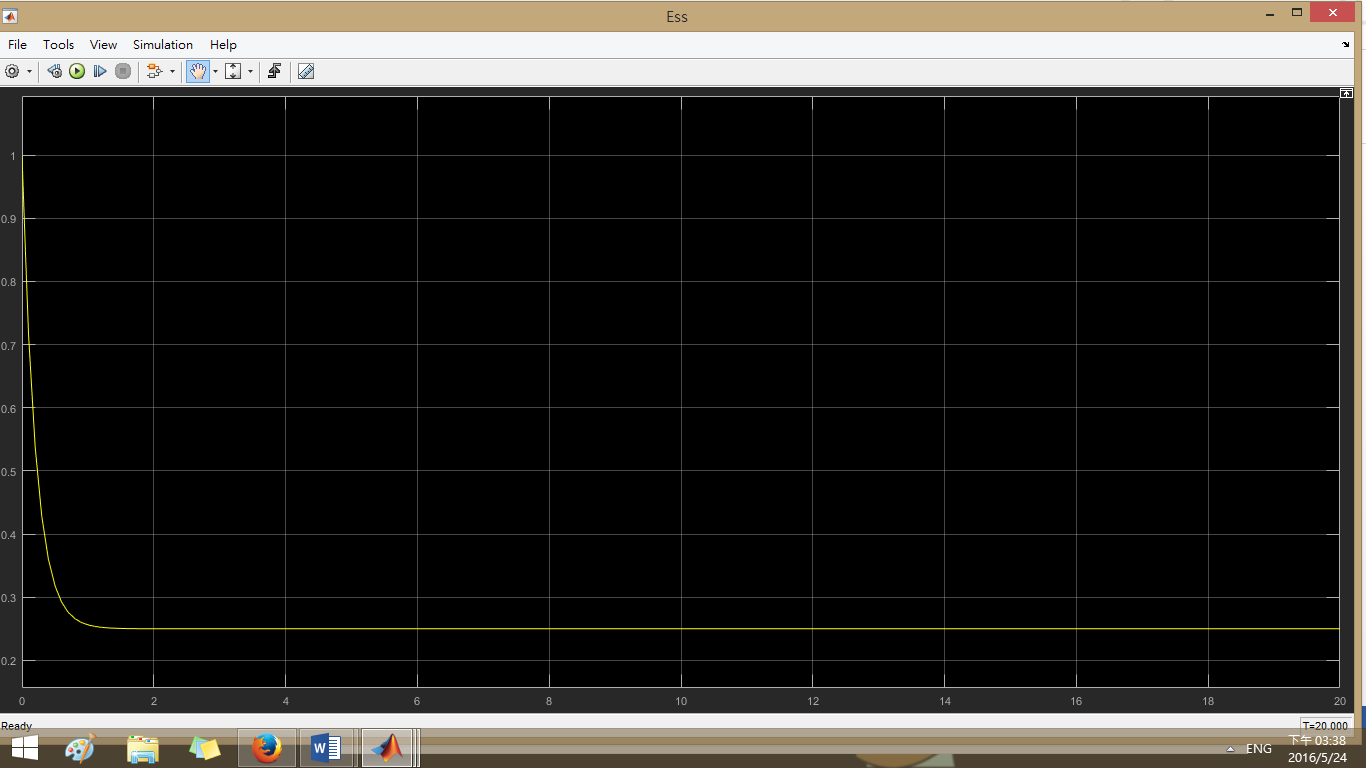
Tsample:0.01



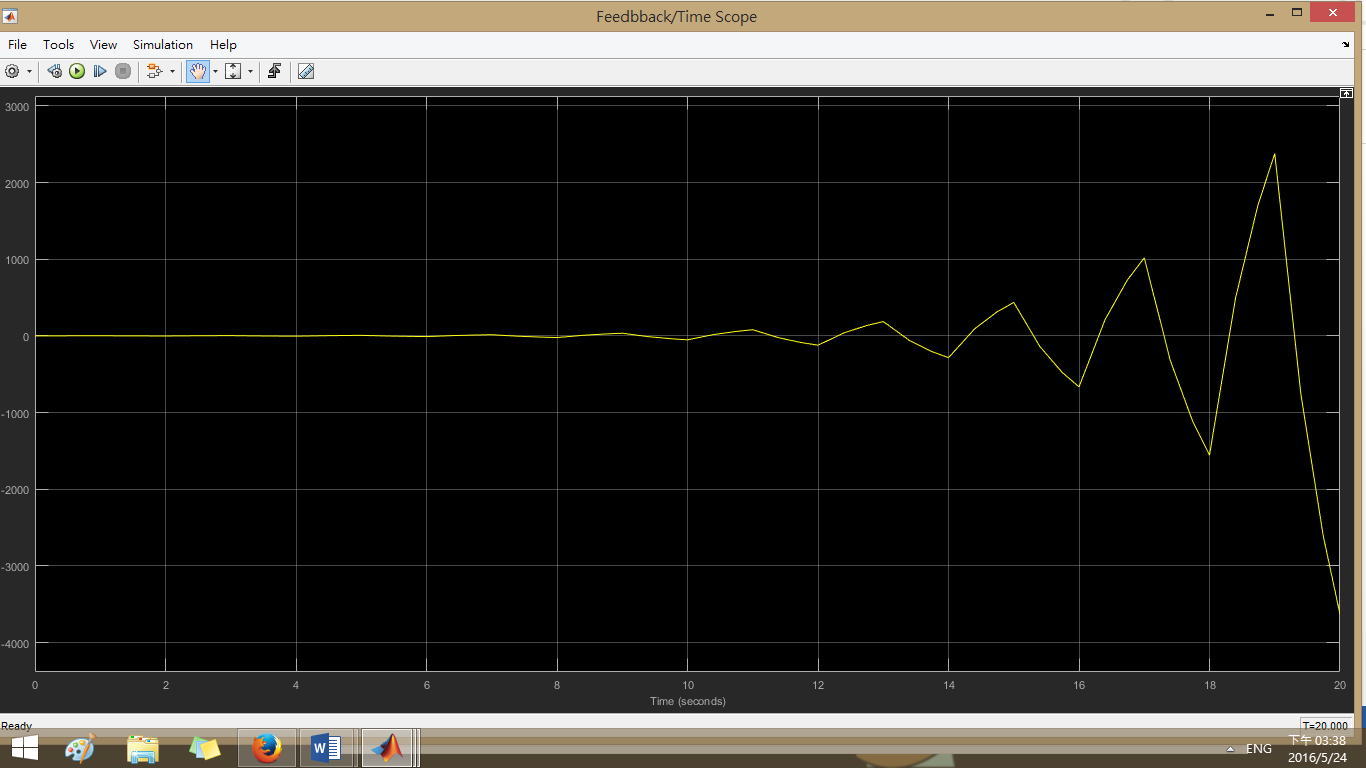


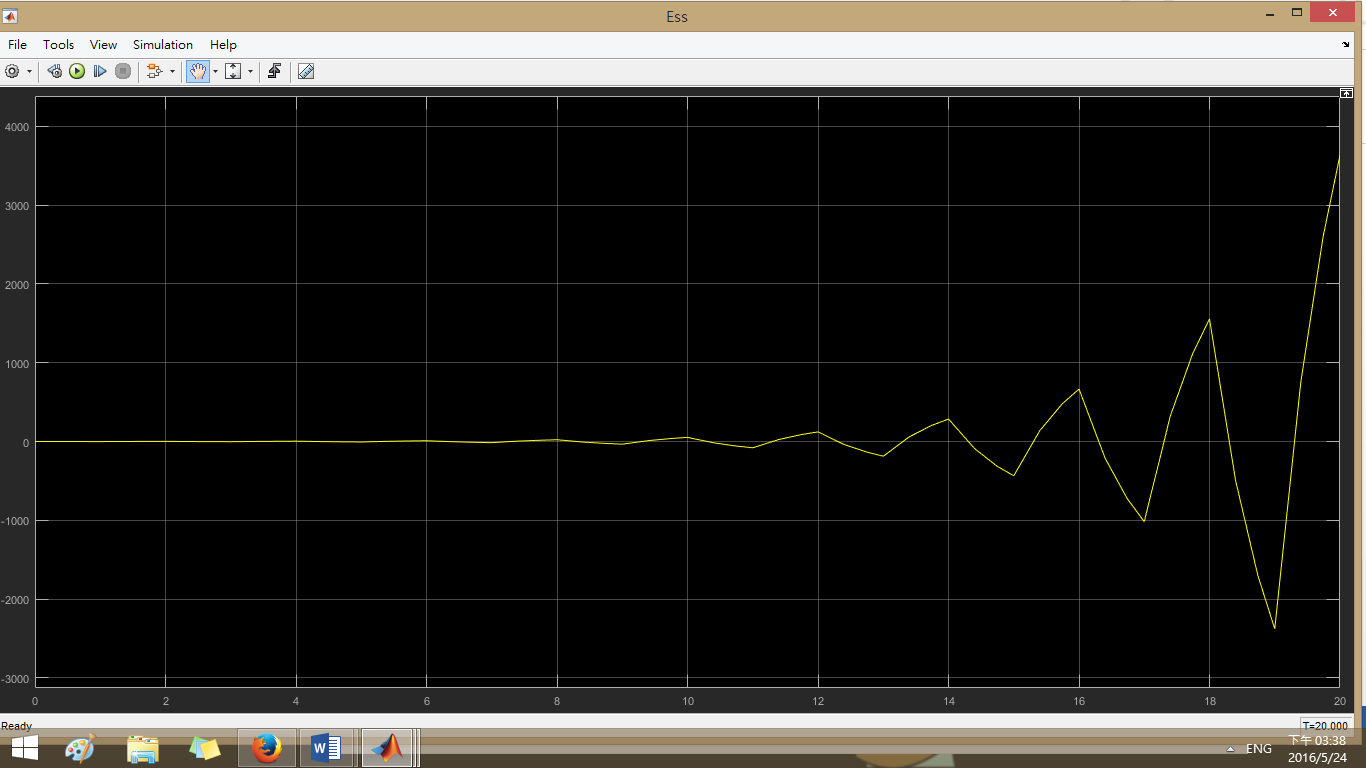
Tsample:0.1



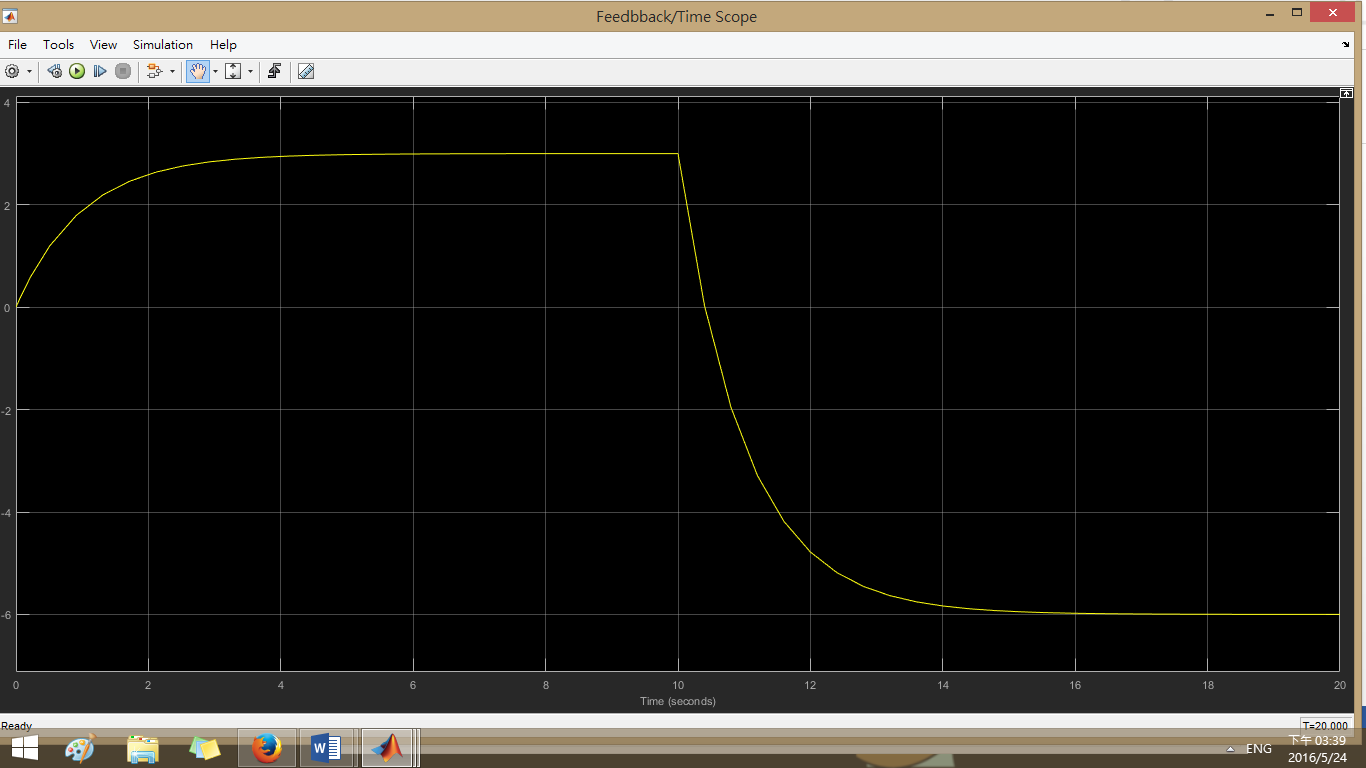


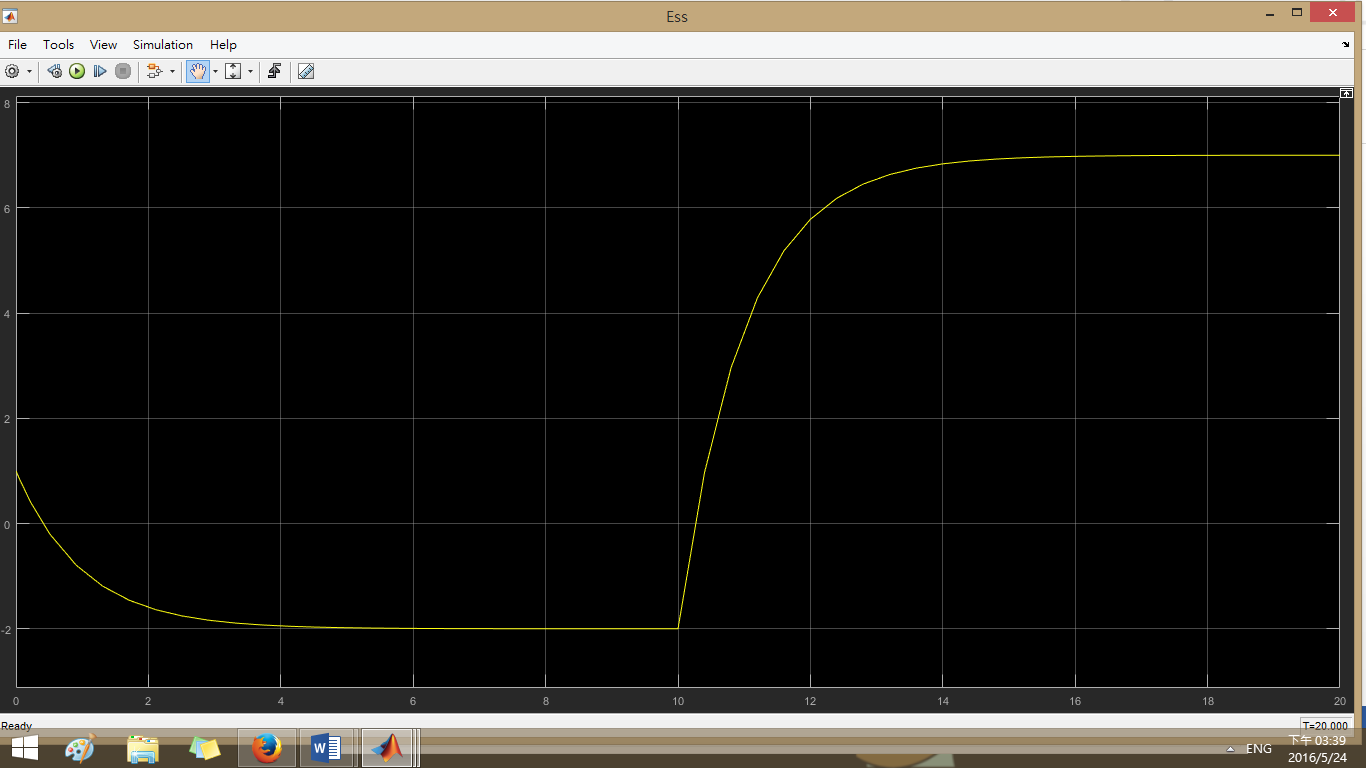
Tsample:1





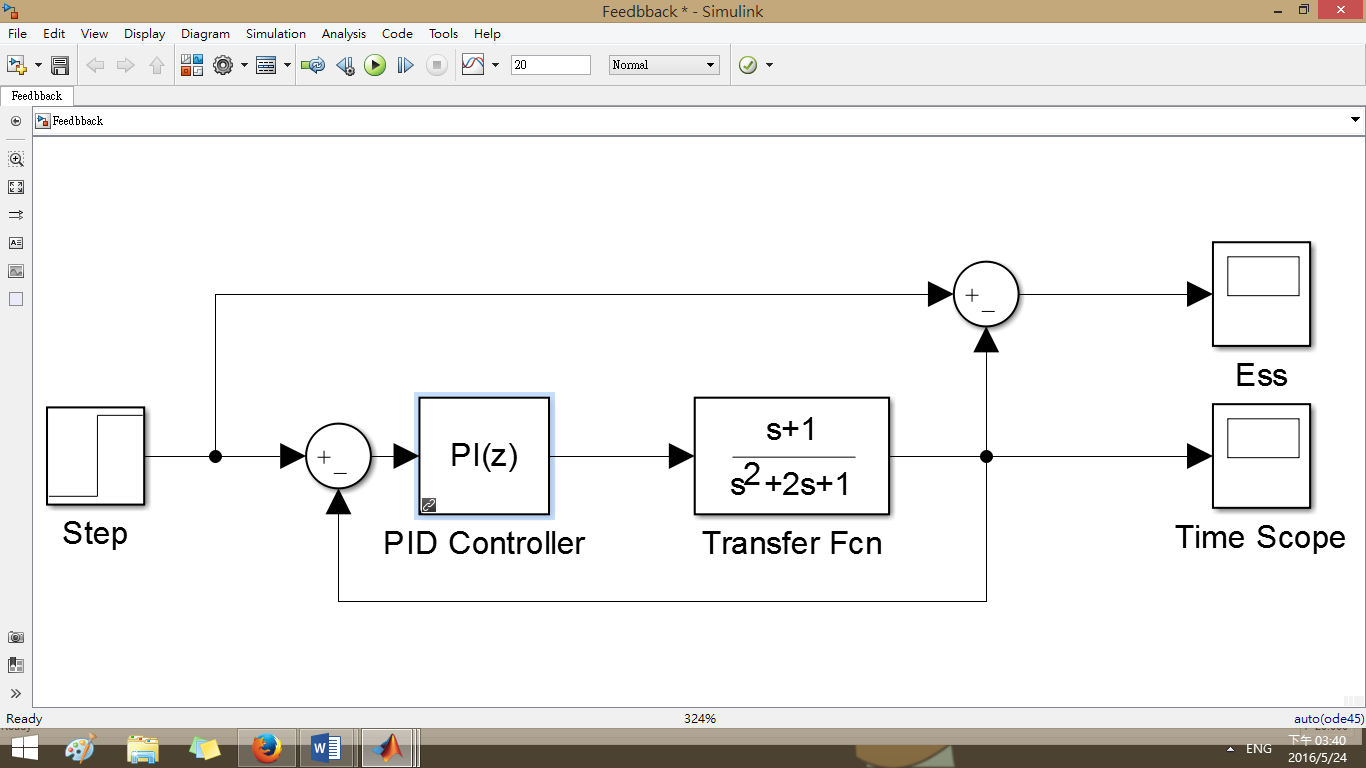
Tsample:10



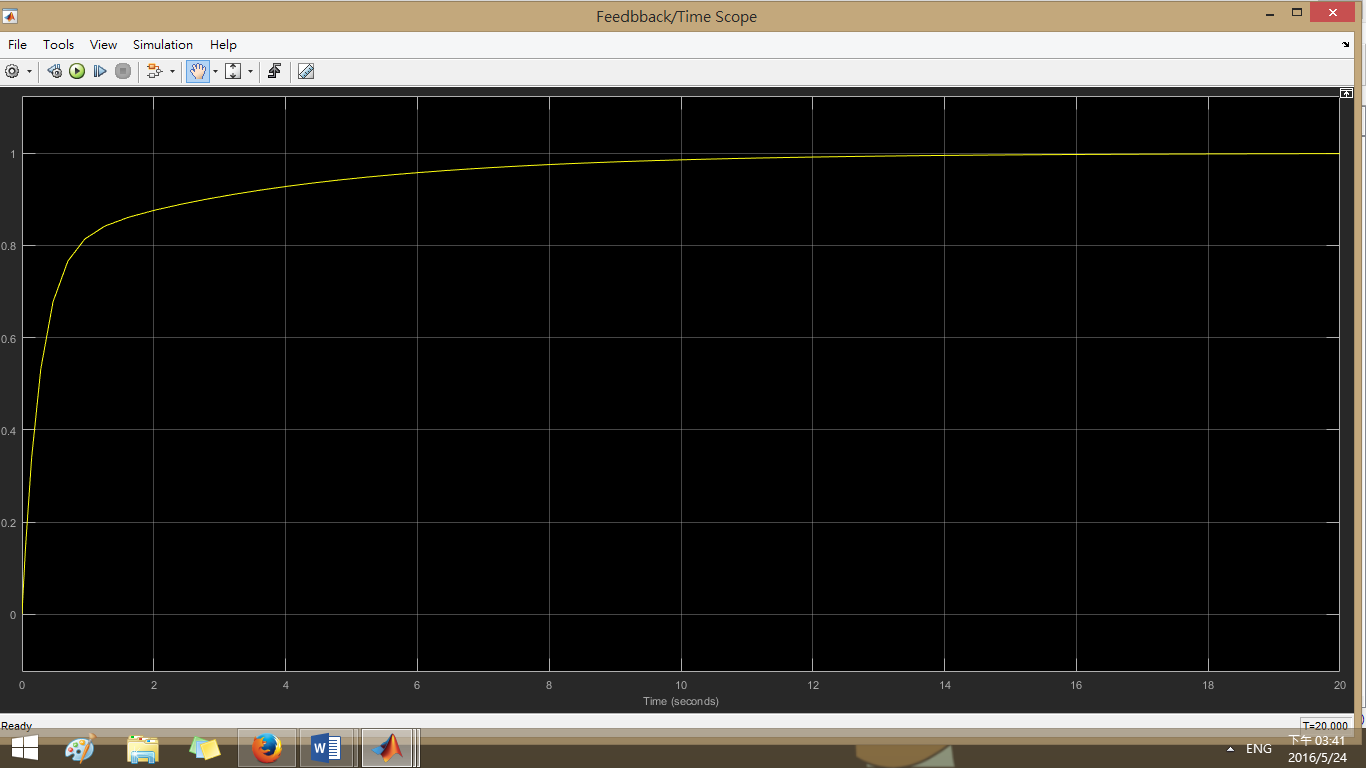


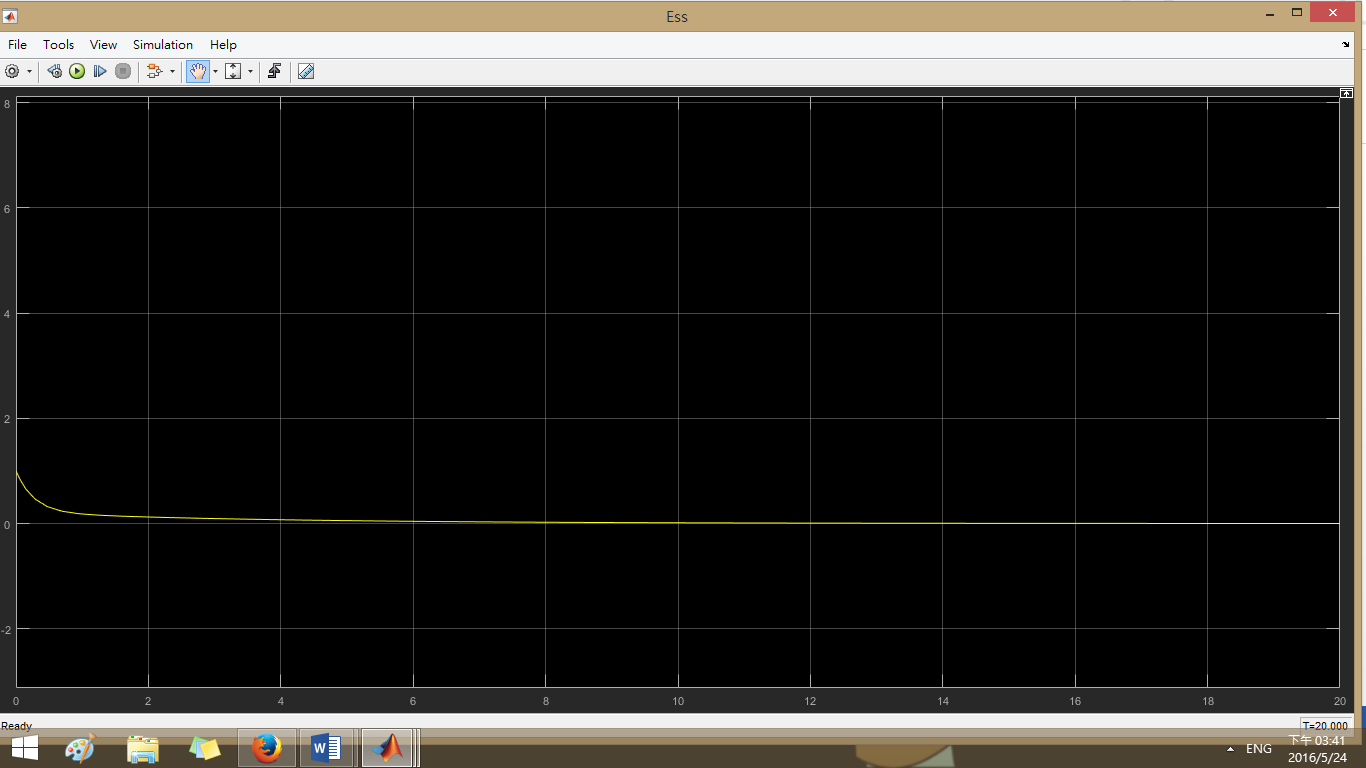
Free PIcontrol

P=3 I=1

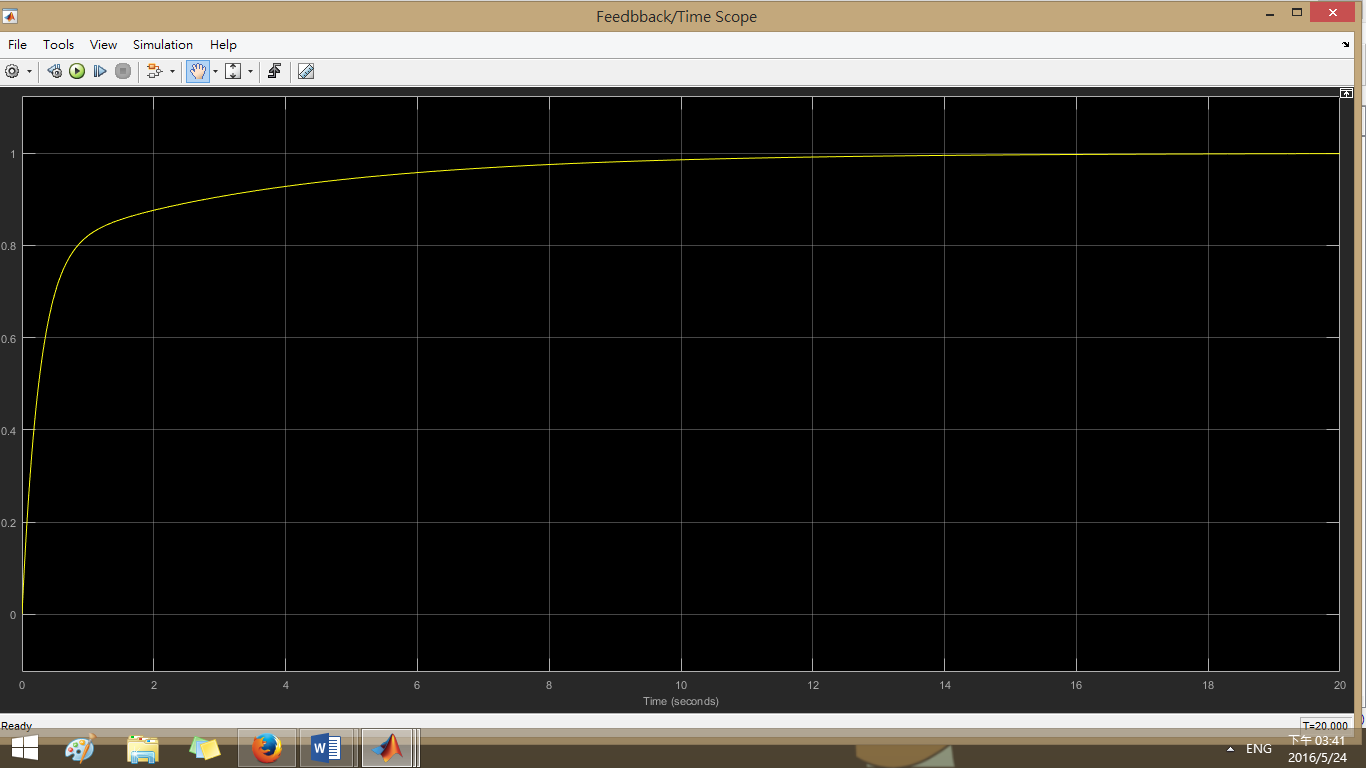


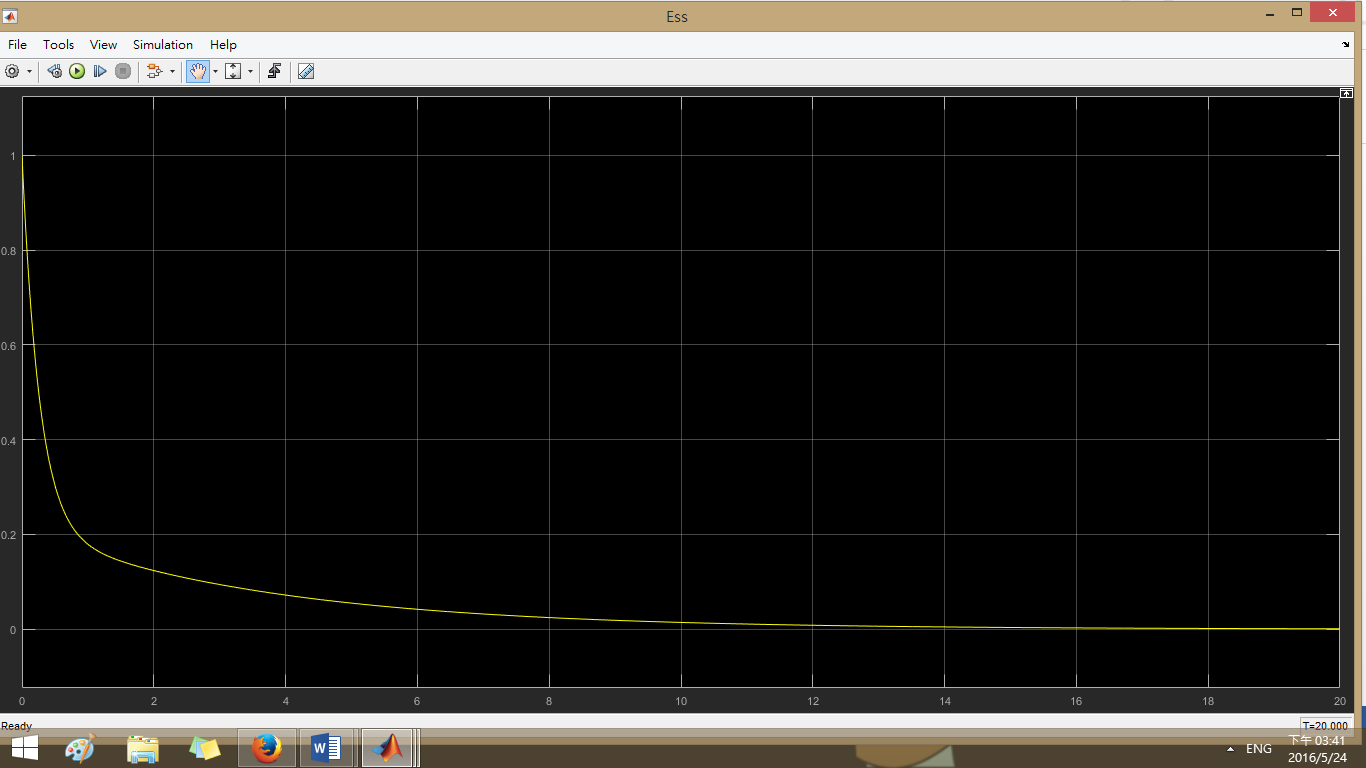
Original



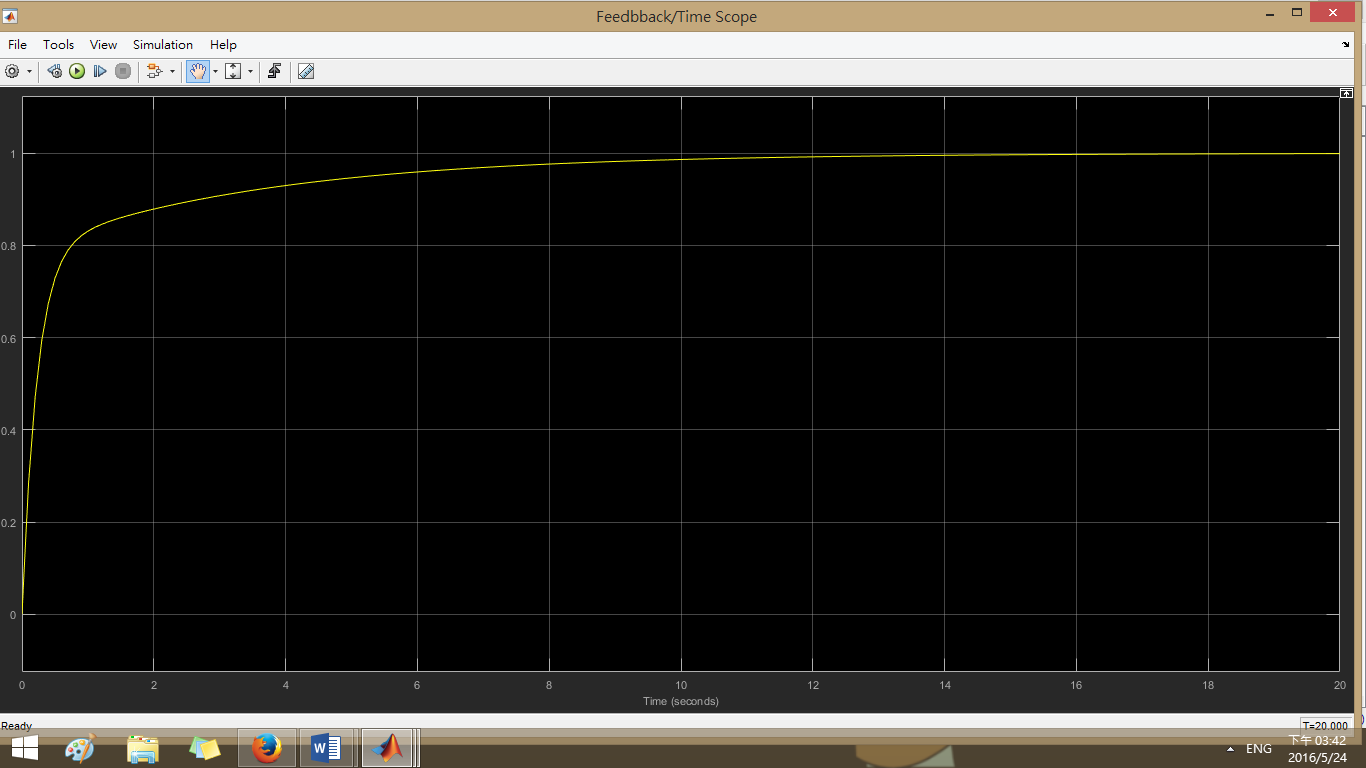


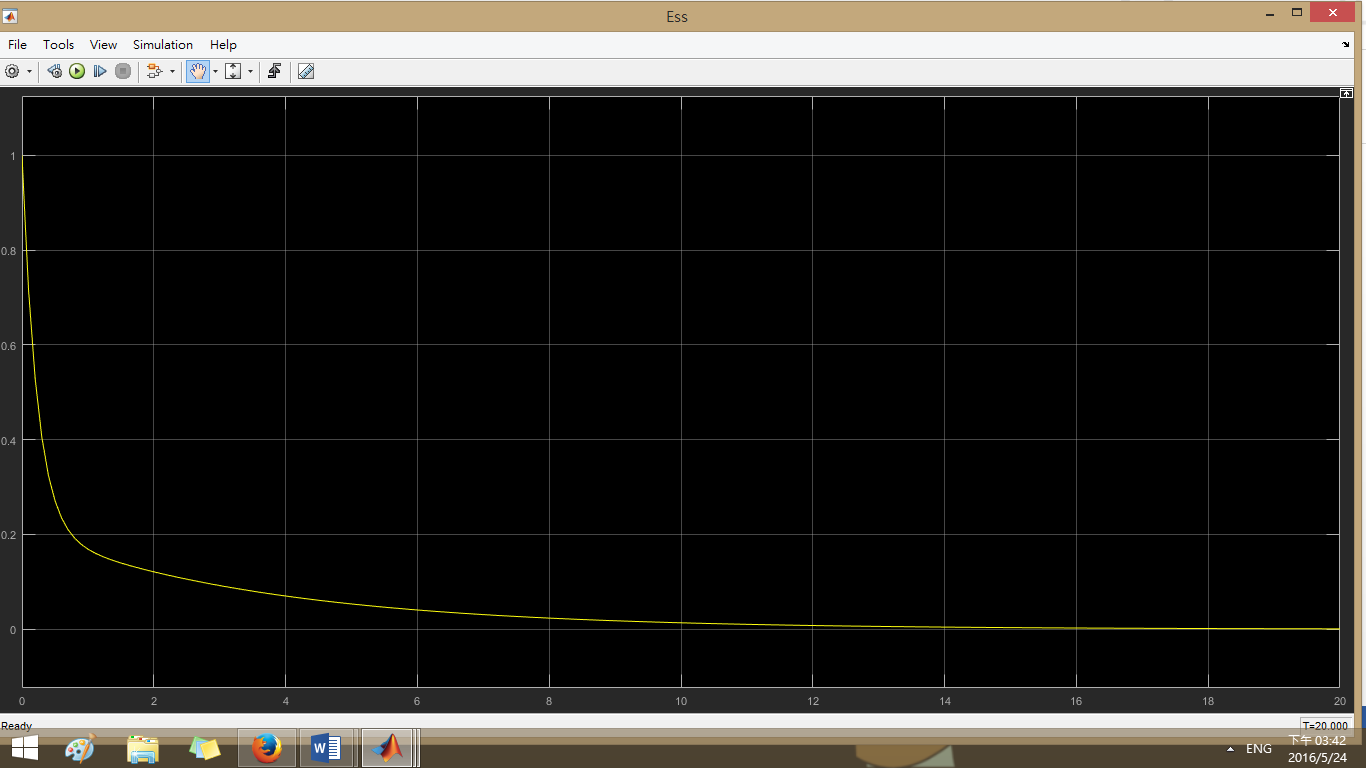
Tsample:0.01



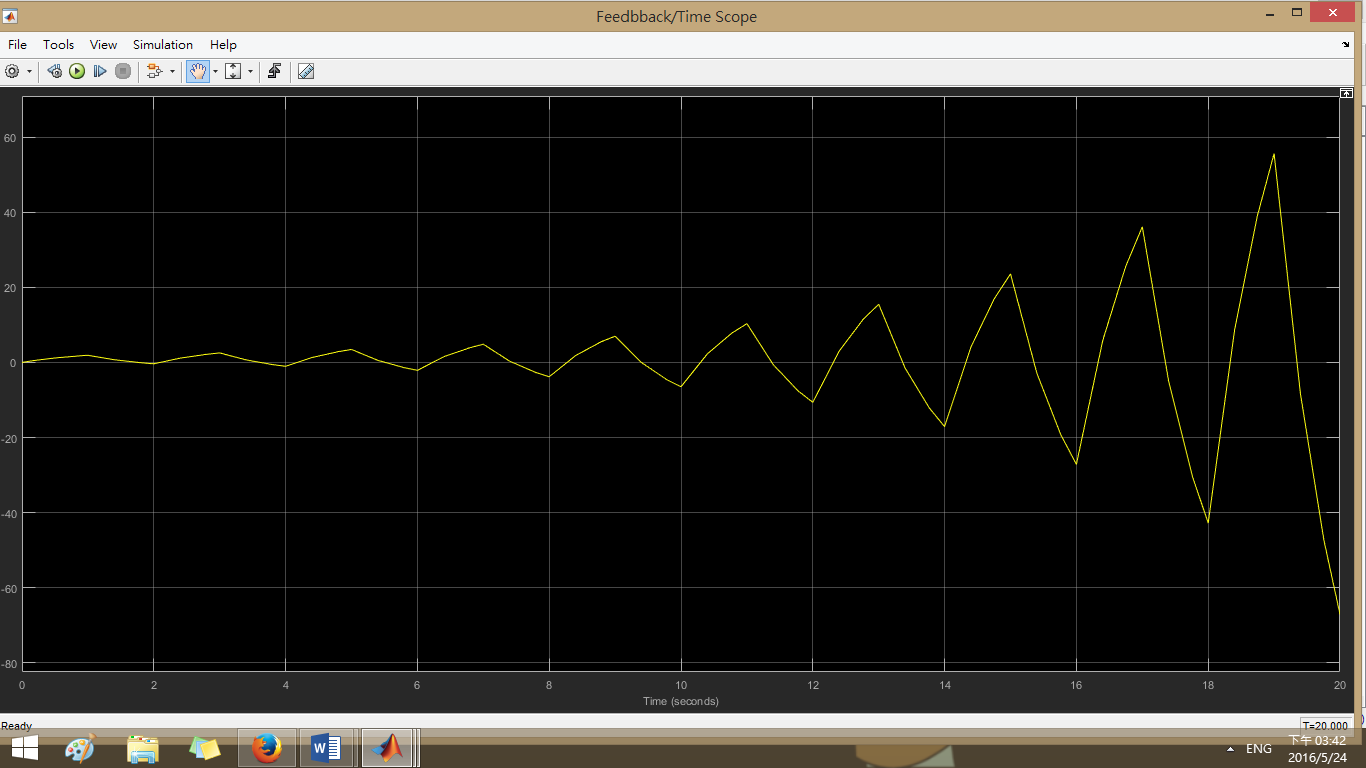


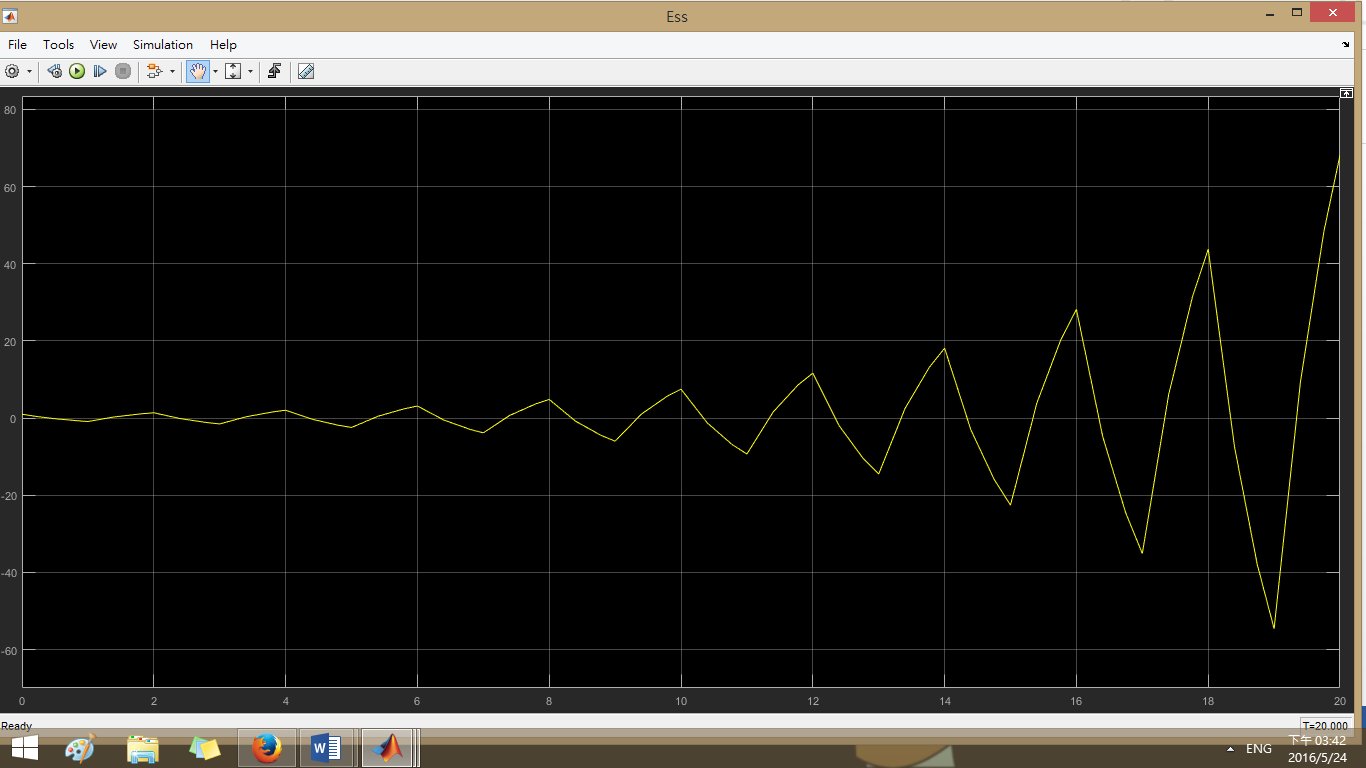
Tsample:0.1





Tsample:1





Tsample:10

