**Imagen que contiene texto

Descripción generada automáticamente**

**System 1 – Inverted Pendulum**

M = 0.228;

m = 0.091;

b = 0.1;

I = 0.006;

g = 9.81;

l = 0.24;

q = (M+m)\*(I+m\*l^2)-(m\*l)^2;

s = tf('s');

us = (((I+m\*l^2)/q)\*s^2 - (m\*g\*l/q));

ys = (s^4 + ((b\*(I + m\*l^2))\*s^3/q) - (((M + m)\*m\*g\*l)\*s^2/q) - (b\*m\*g\*l\*s/q));

ys = s^4 + (.3617\*s^3) - (21.98\*s^2) - (6.89184\*s);

system1 = us/ys;

A = [0 1 0 0;0 0 1 0; 0 0 0 1; -.0317 21.98 6.892 0];

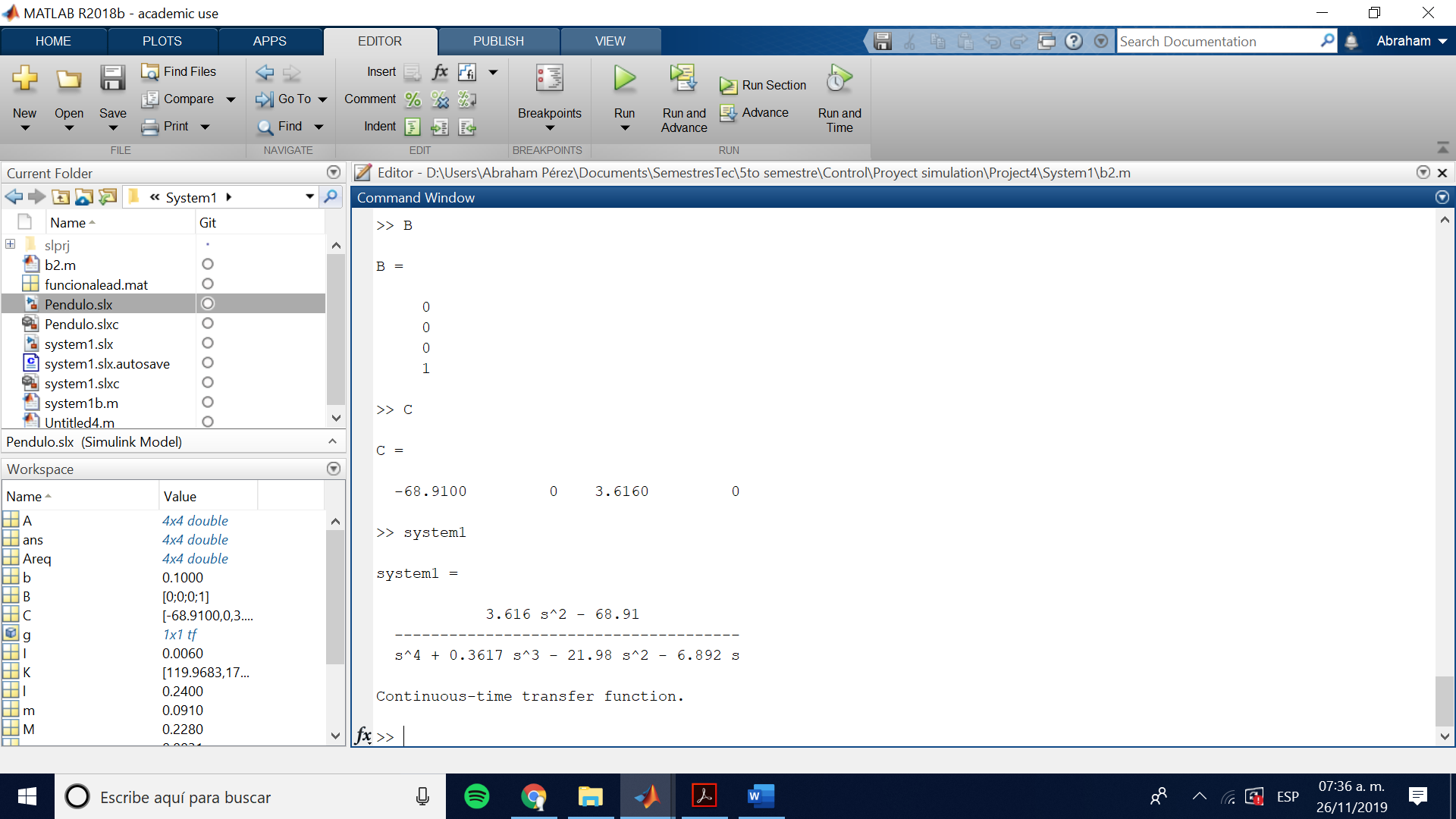
B = [0 0 0 1]';

C = [-68.91 0 3.616 0];

Areq = [0 1 0 0;0 0 1 0; 0 0 0 1; -120 -154 -71 -14];

poly([-5 -3 -2 -4])

g=system1;



*State Feedback – Step unit = c = 26*

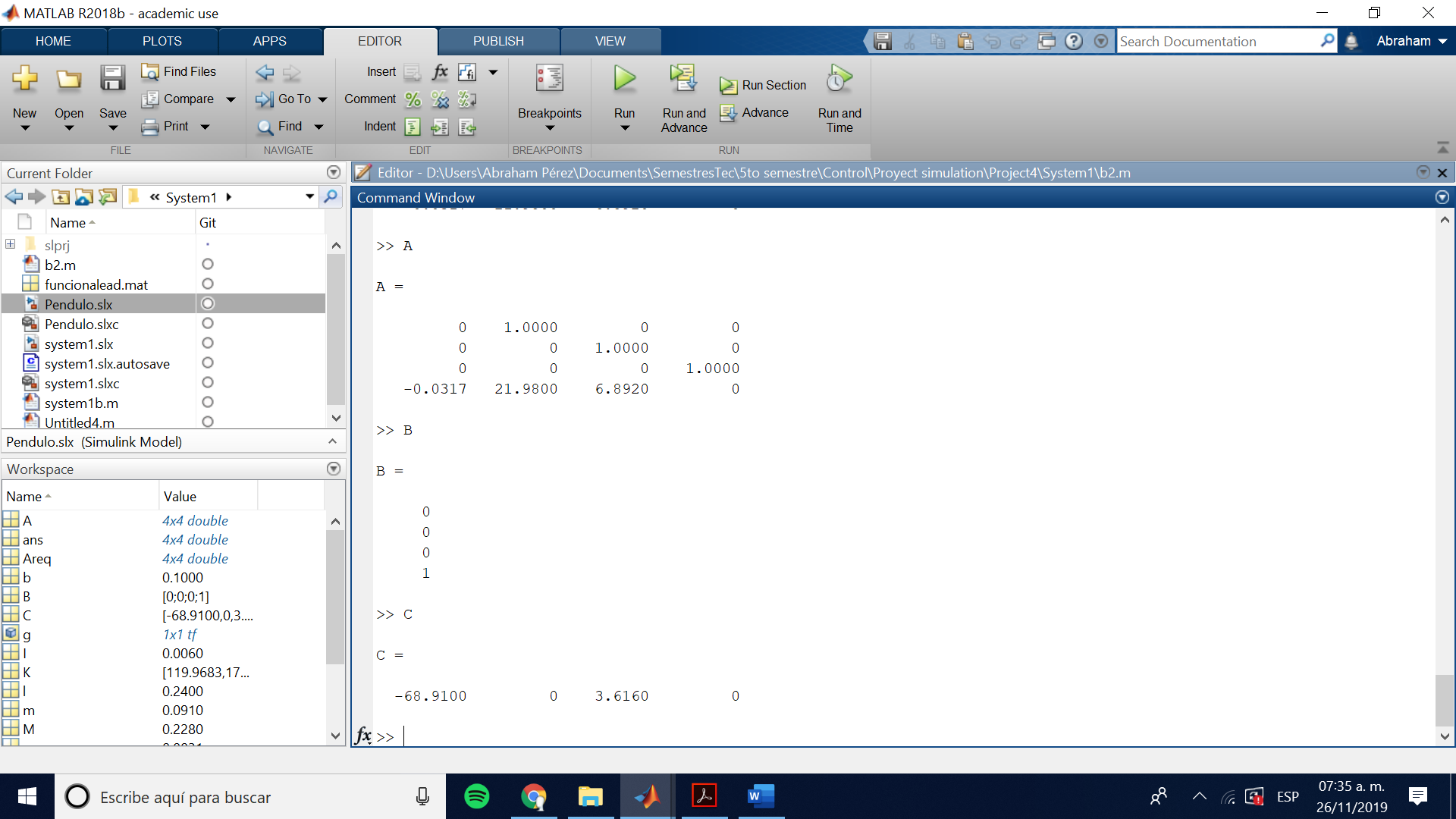
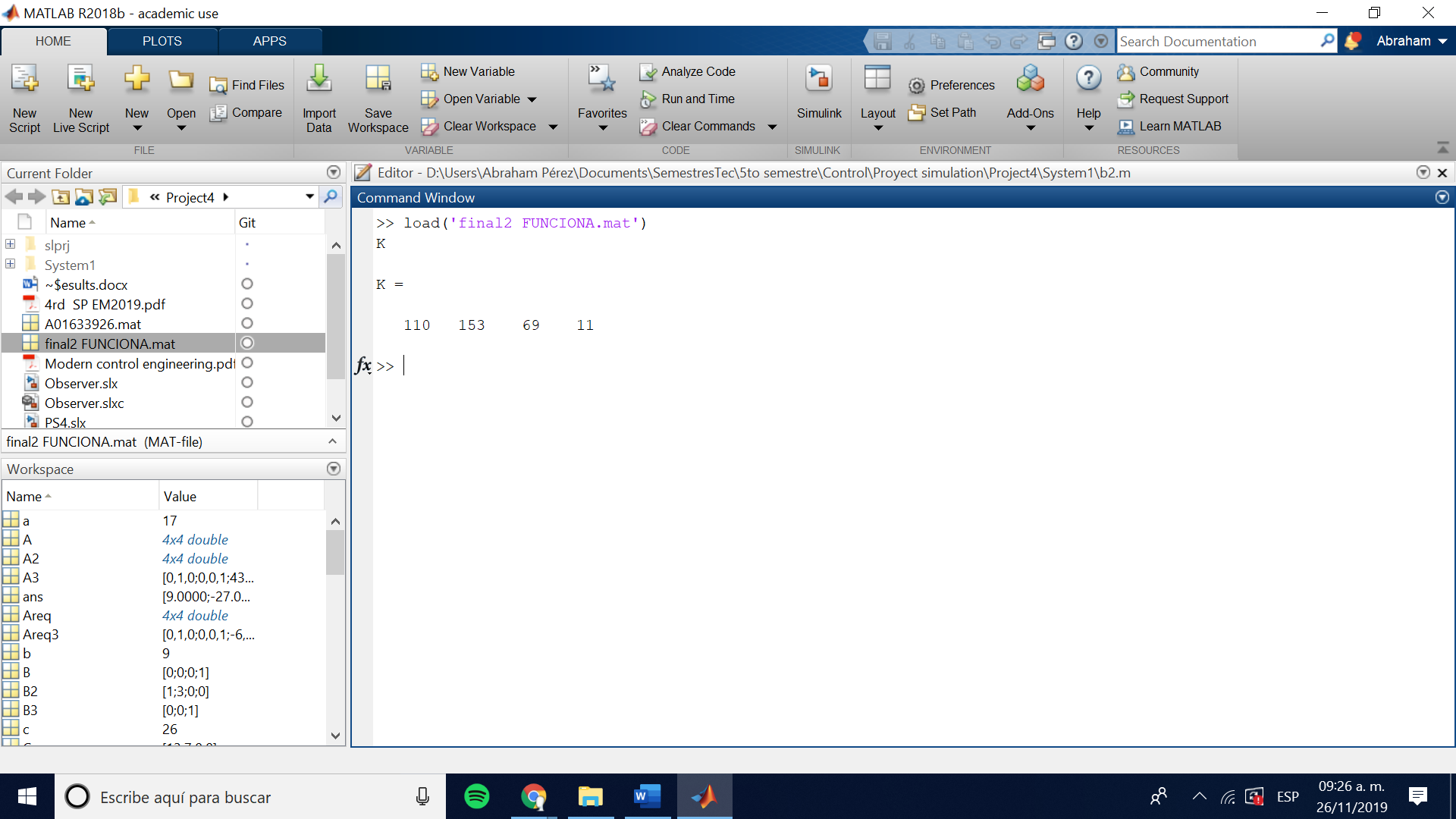
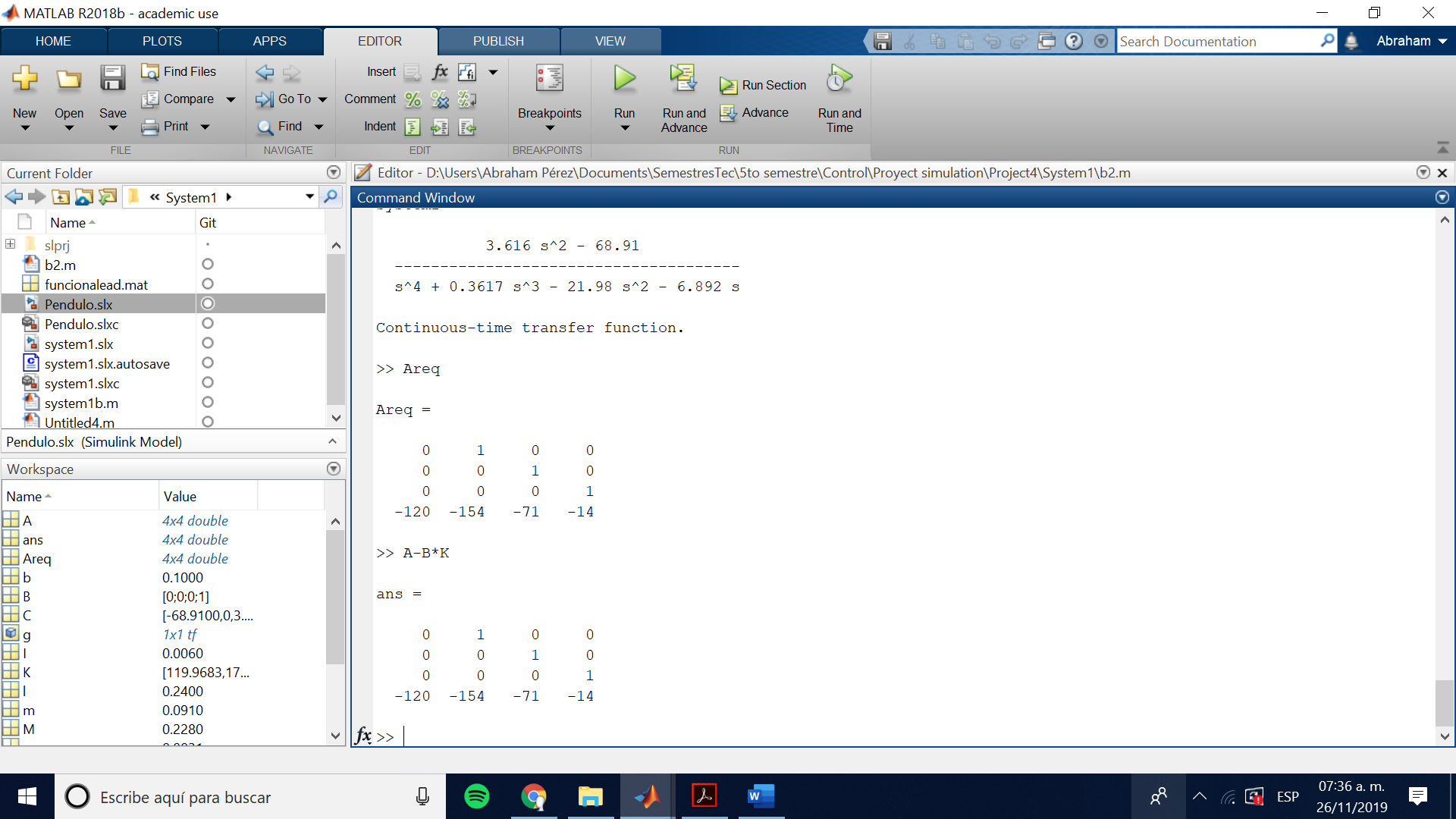


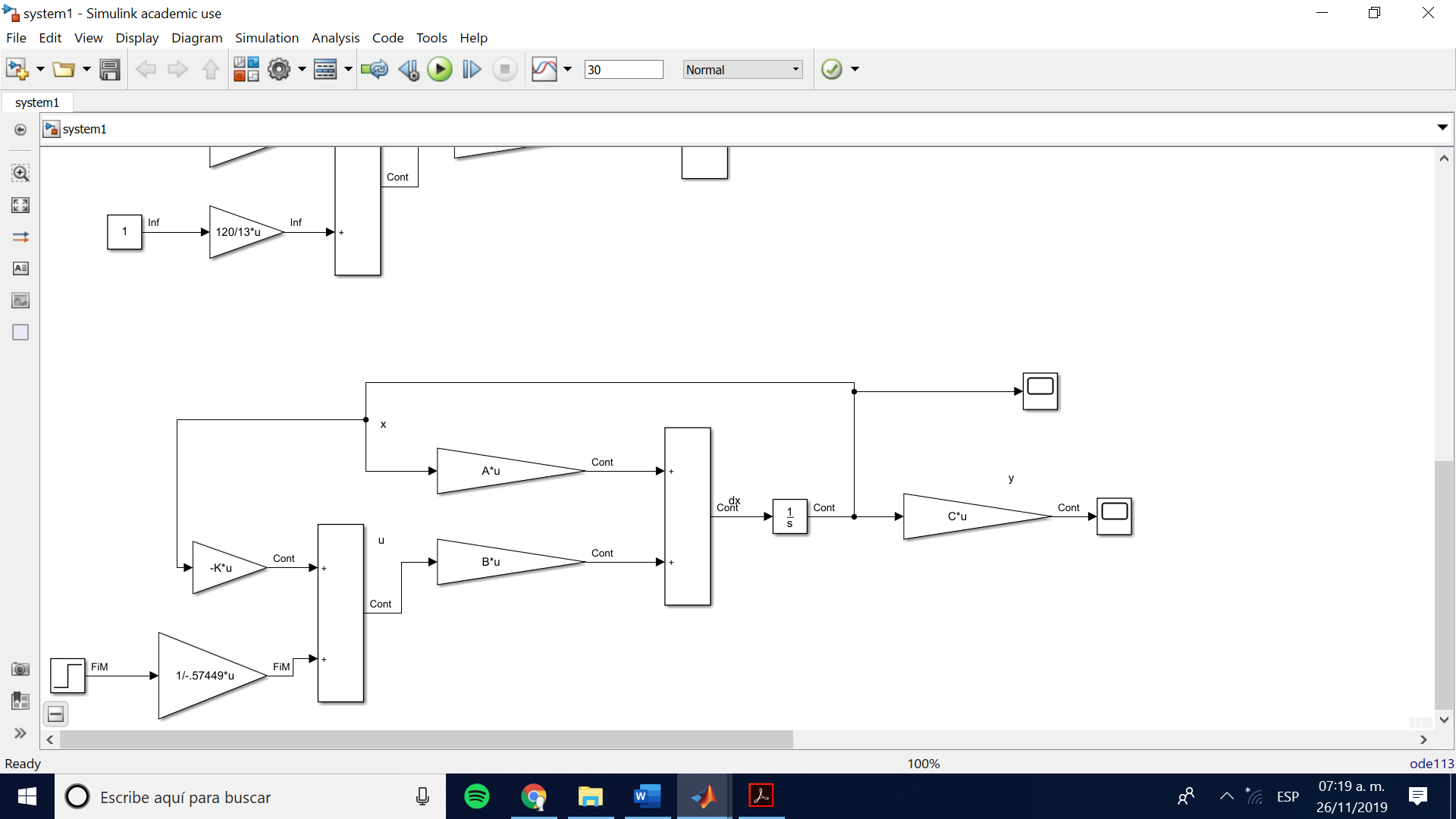
Imagen que contiene electrónica

Descripción generada automáticamente



Areq = (A – B \*K)





 *State Feedback r(t) = sin (t)*

**System 2 – Transfer fuction**

*State Feedback - r(t) = c = 26*

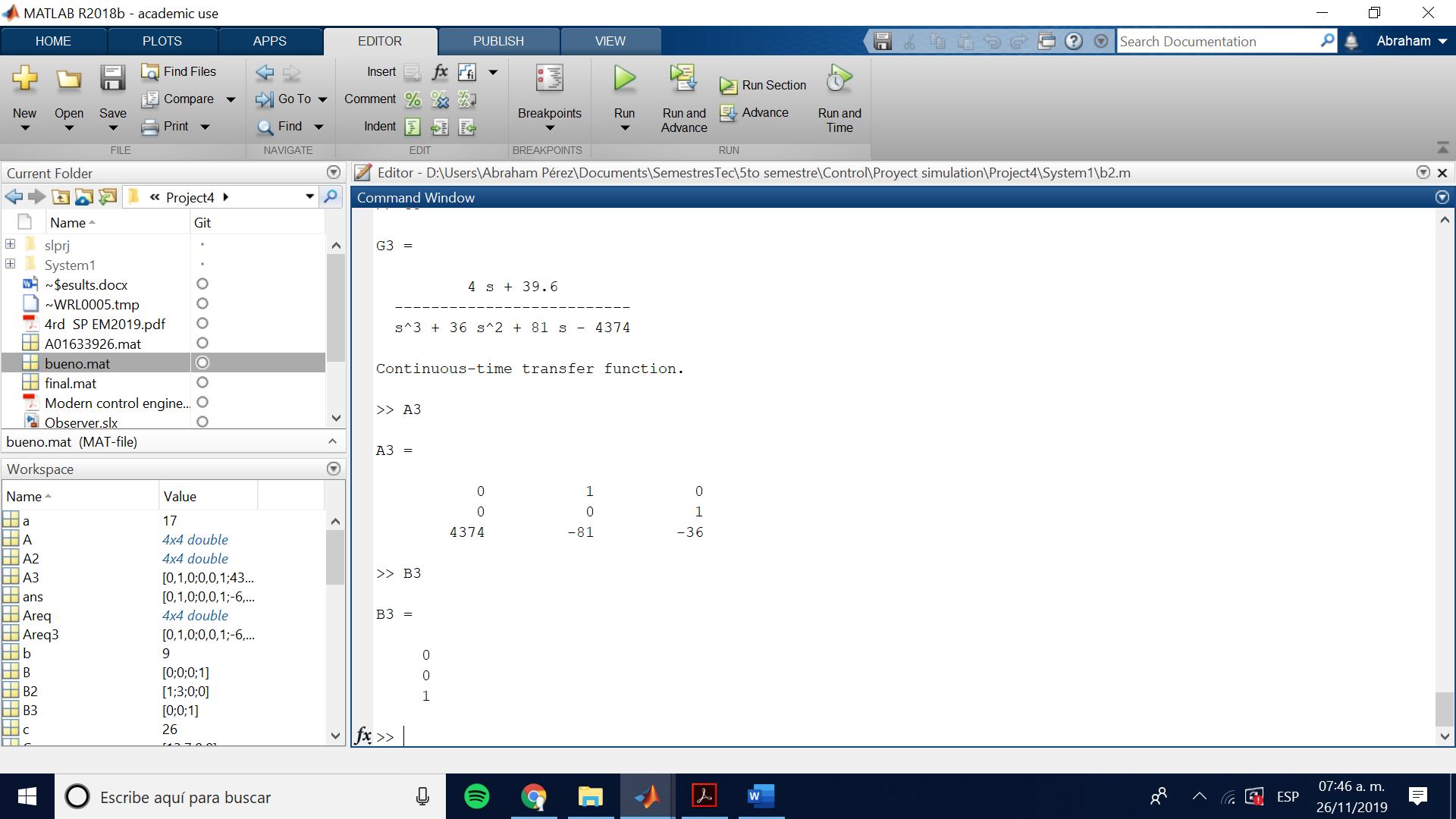
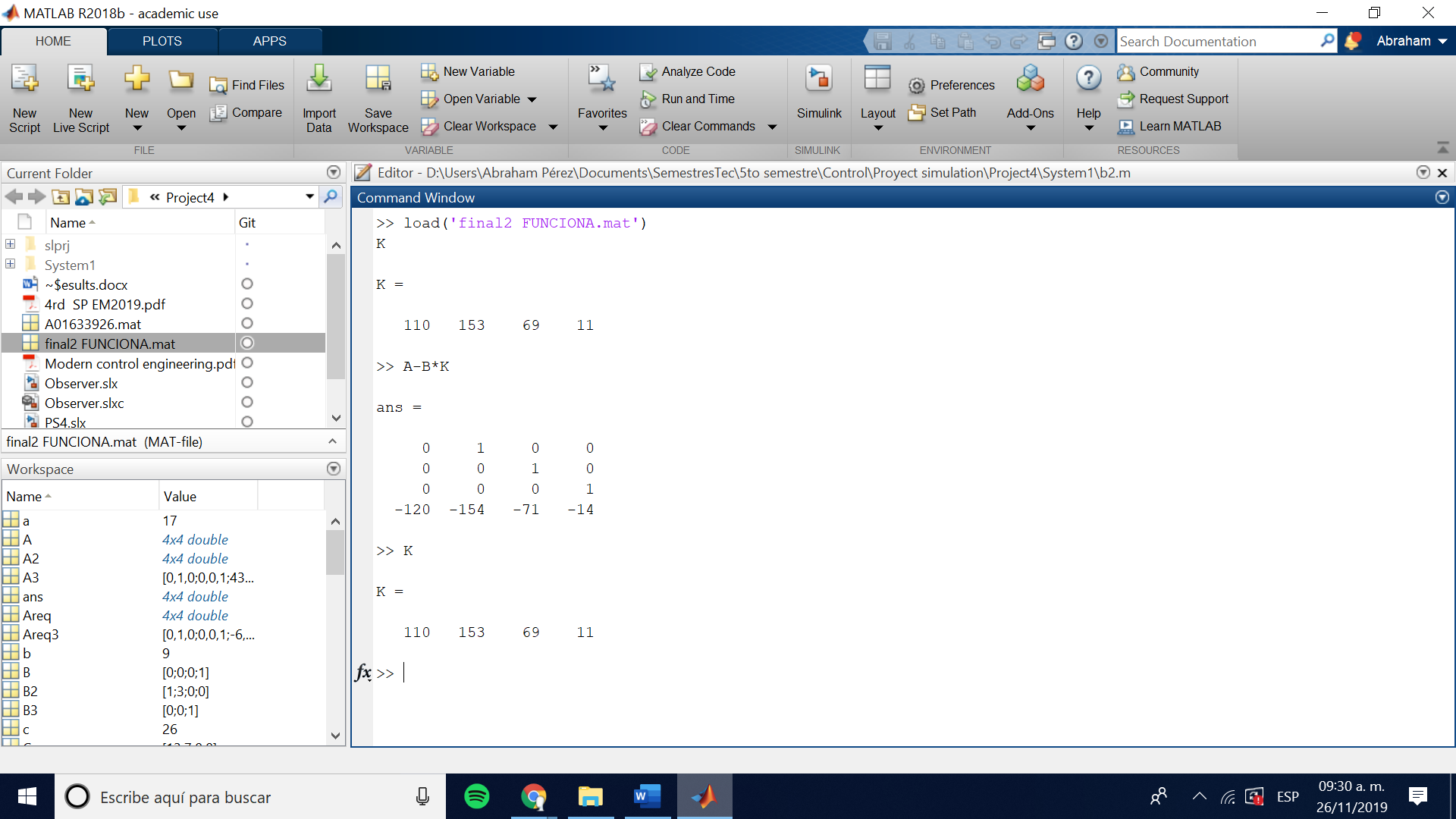
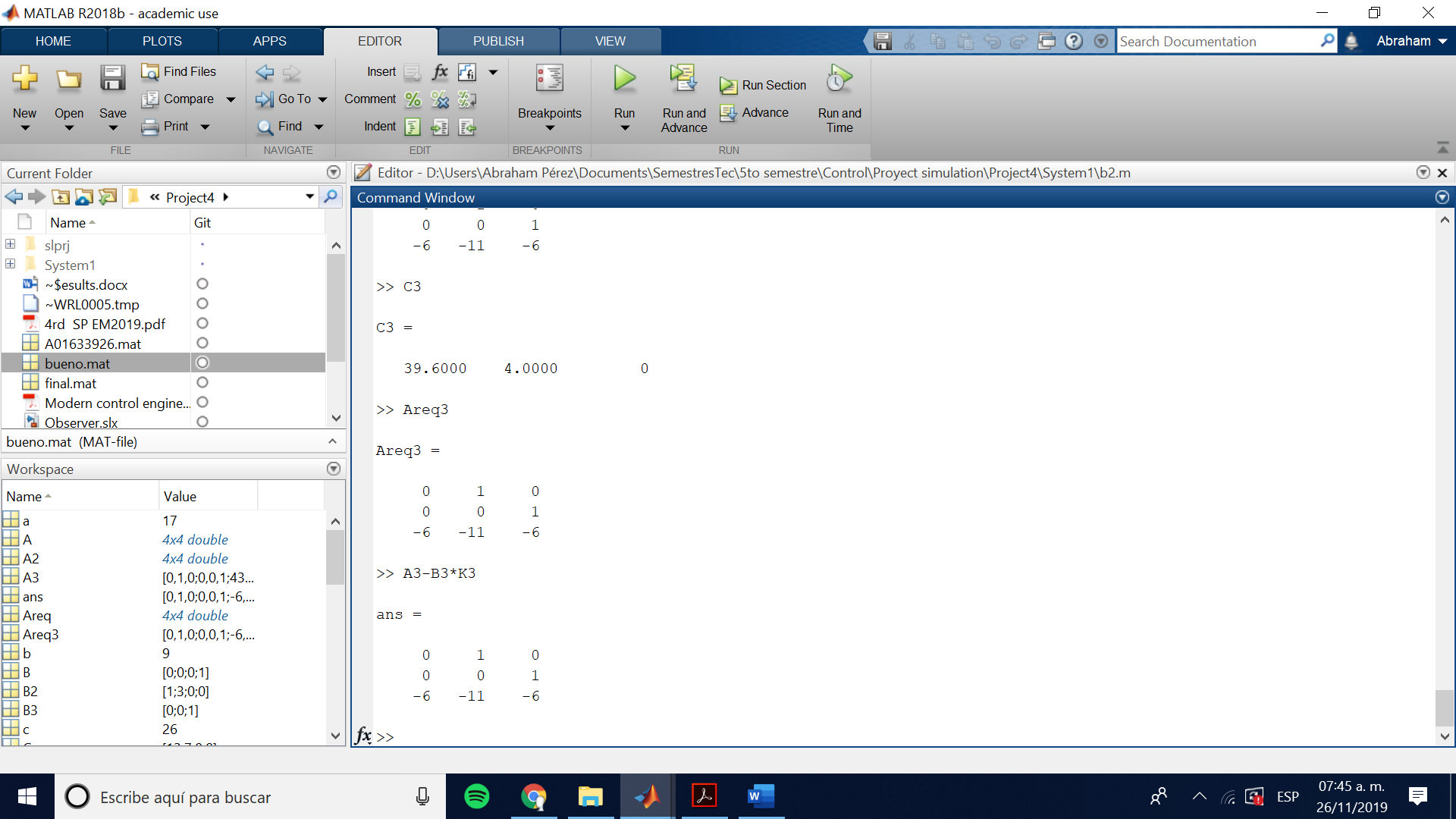


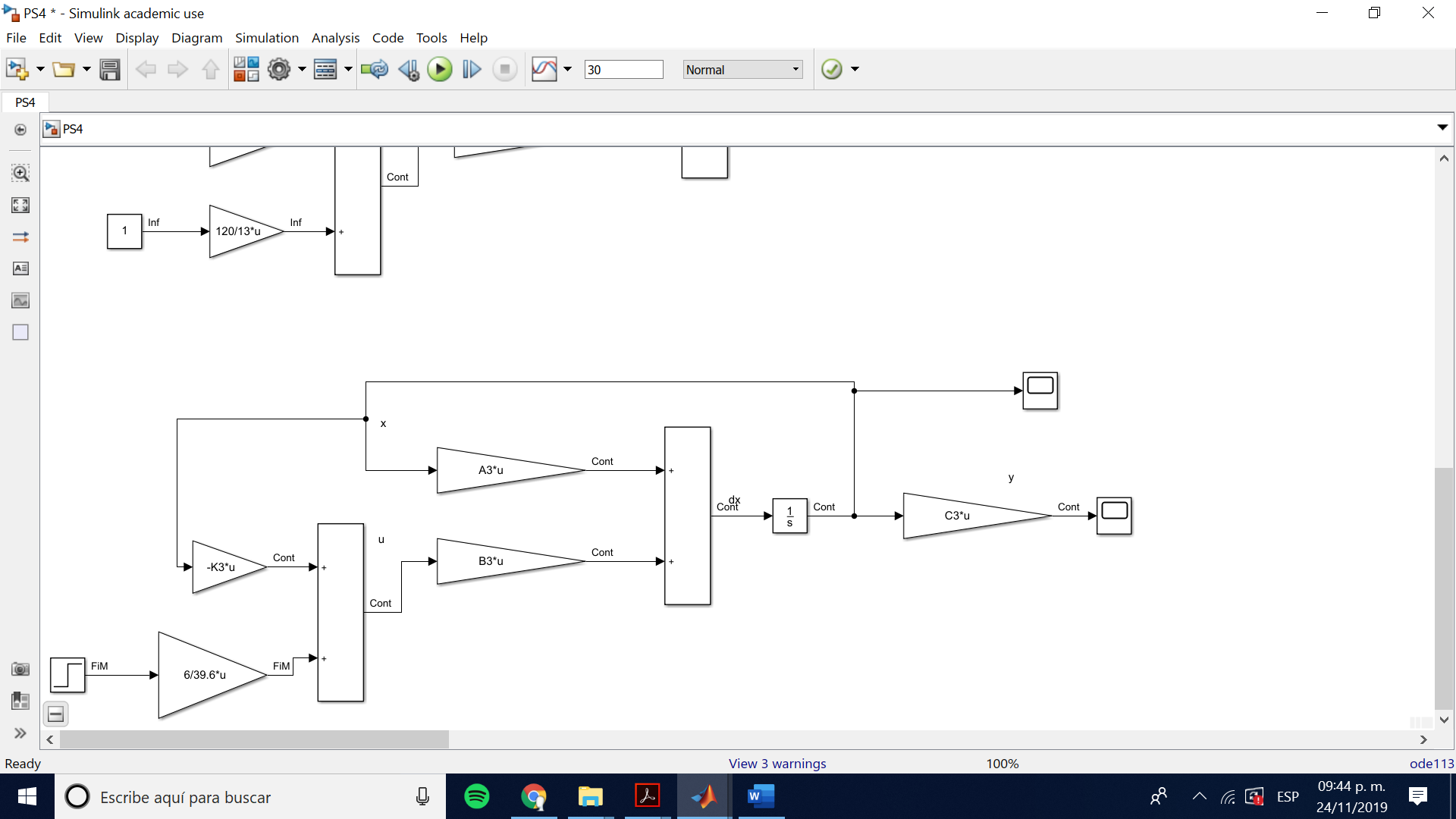
Imagen que contiene texto, pizarra

Descripción generada automáticamente

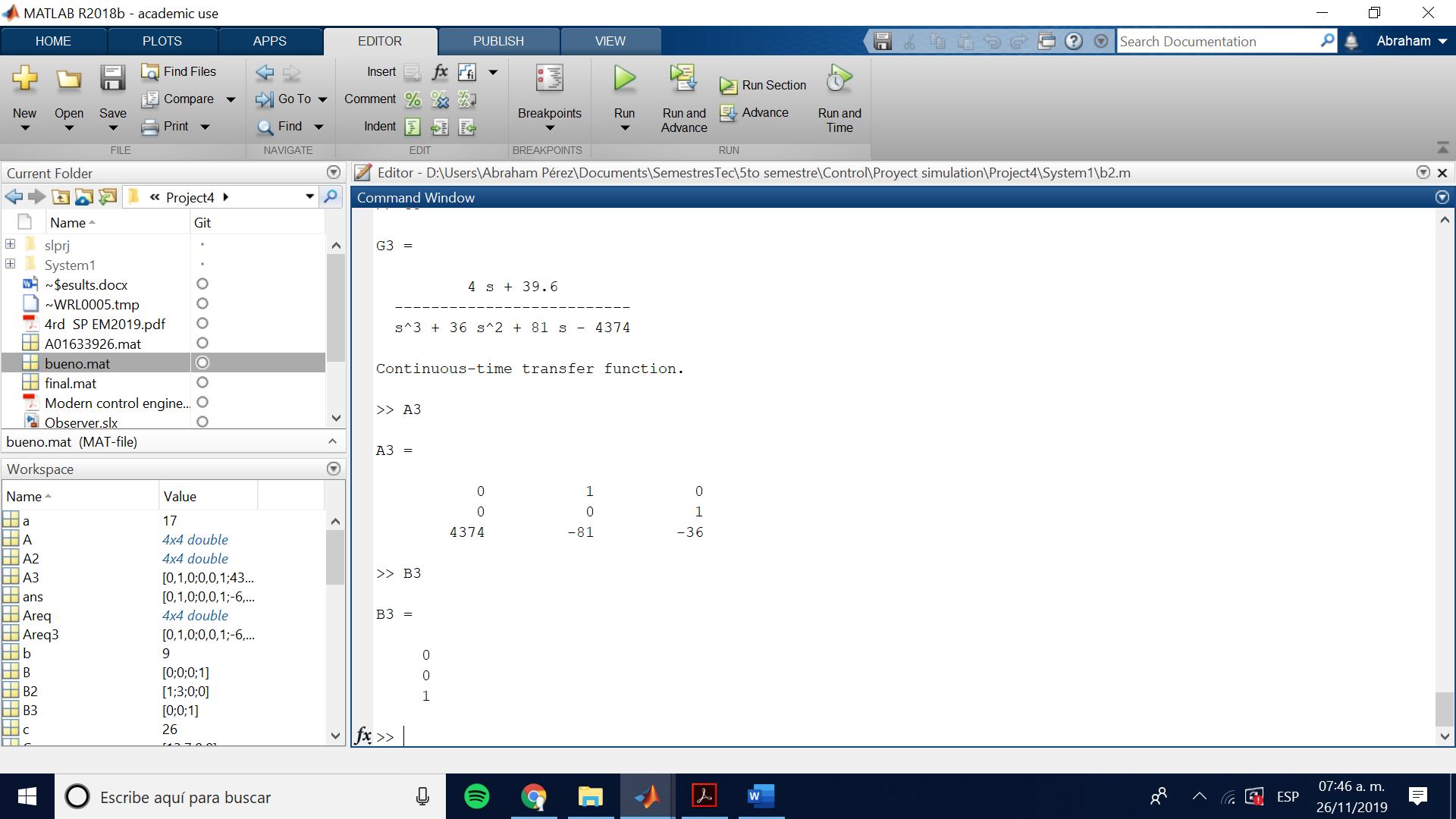


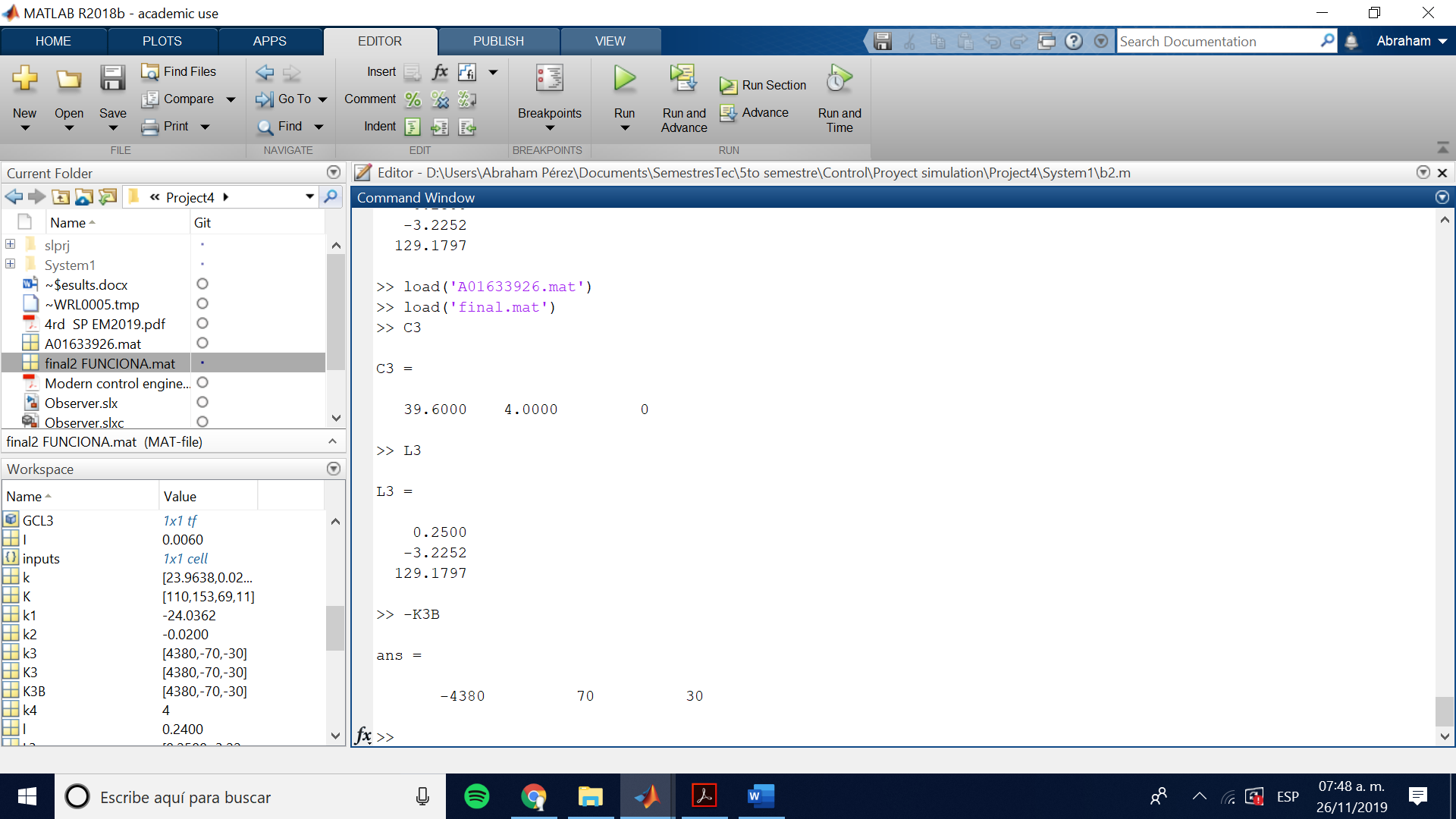
Areq3 = (A3 – B3 \*K3)

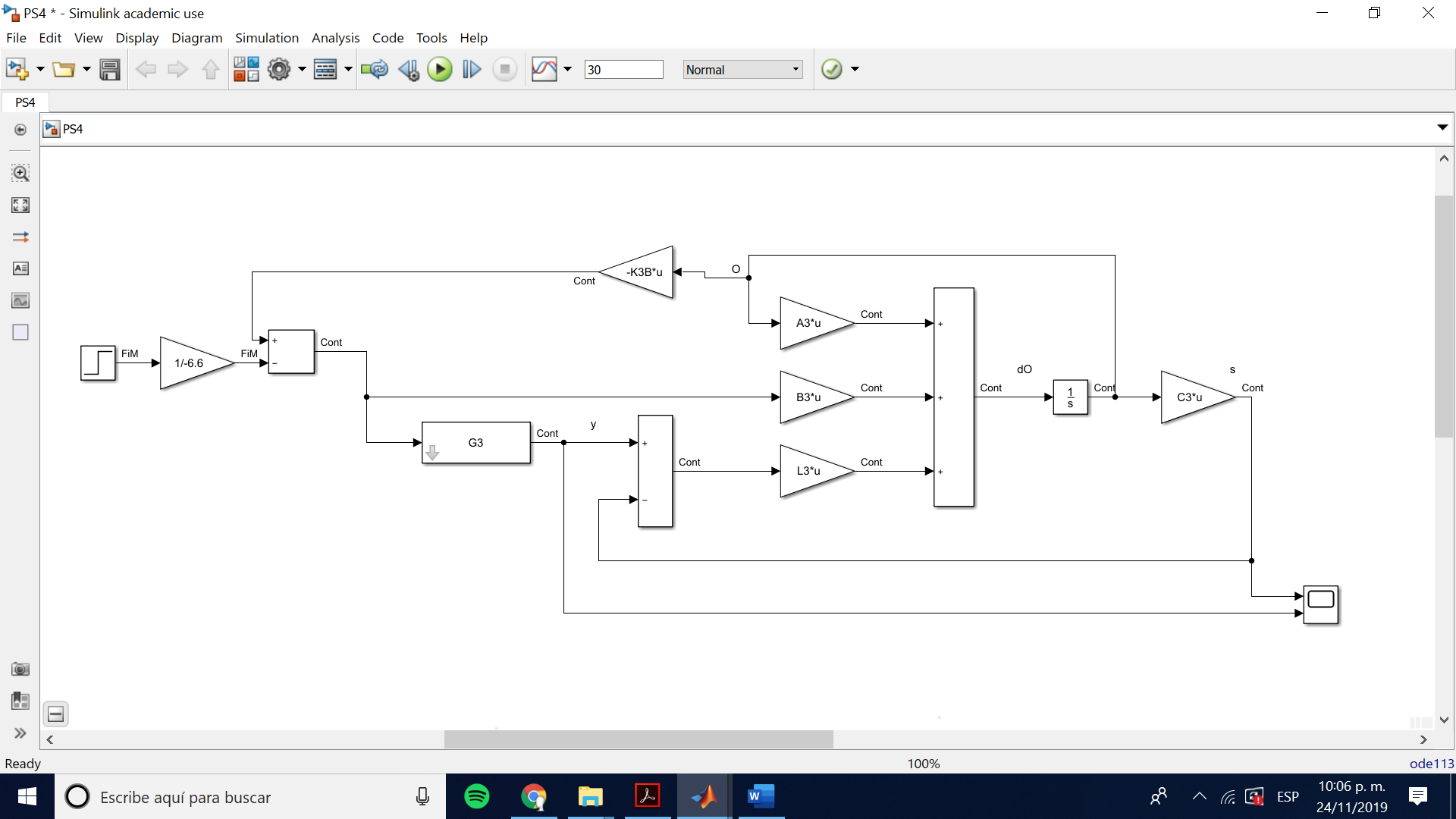




 *State Feedback with observer – r(t) = 2c = 52*







 *State Feedback r(t) = sin (t)*