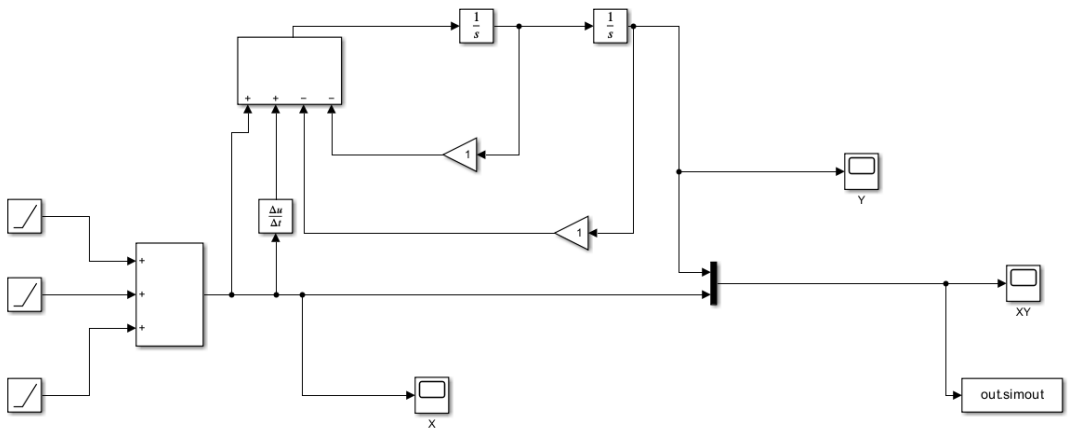
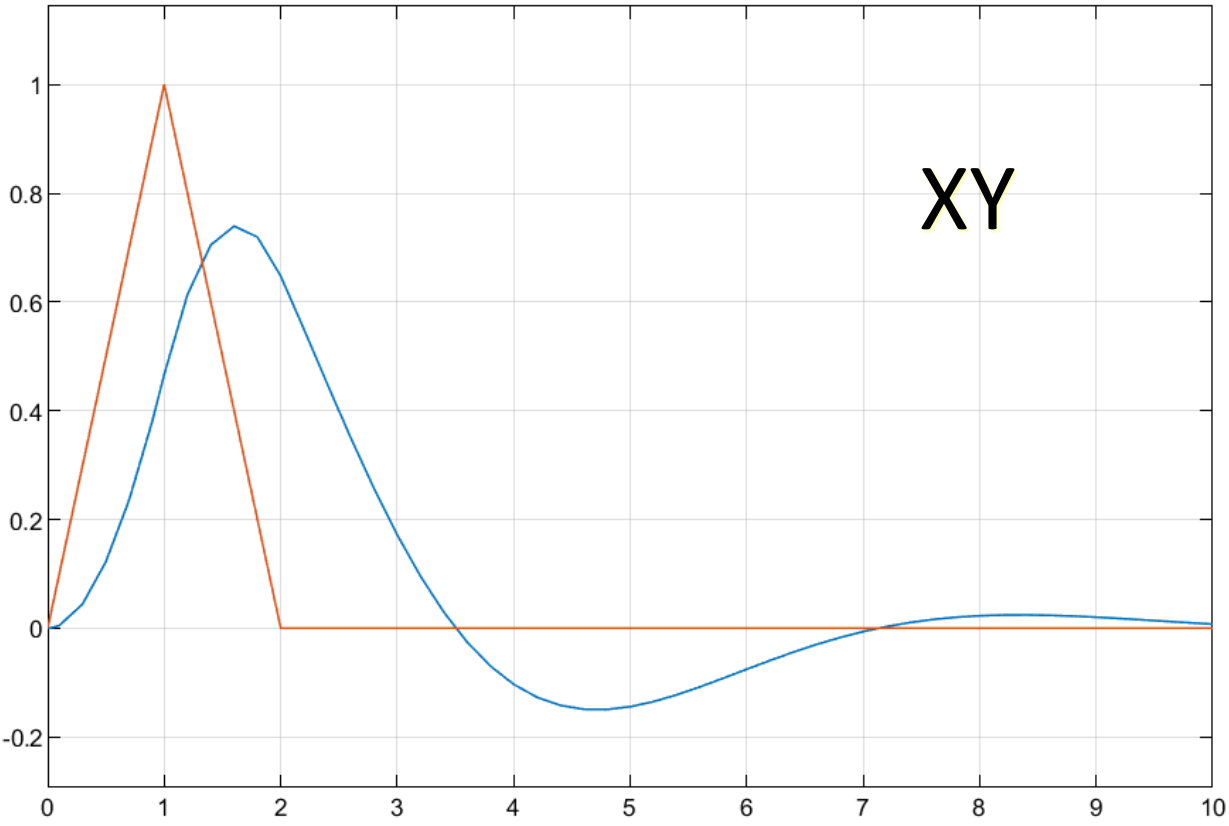
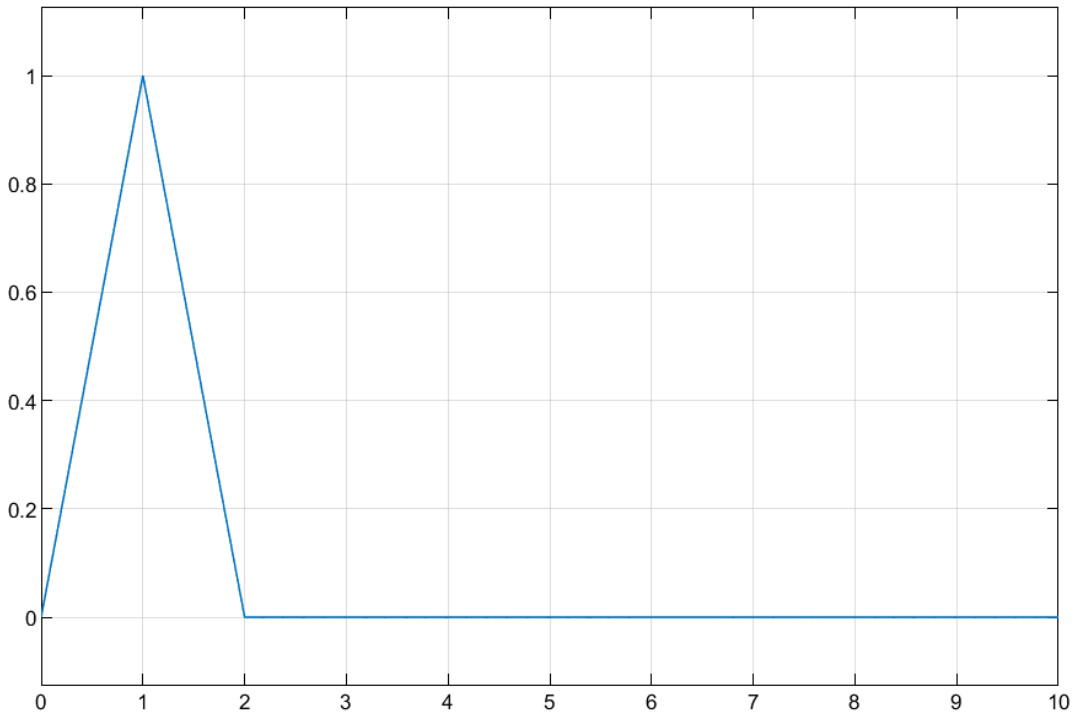
Problem 4 :

- Simulink:

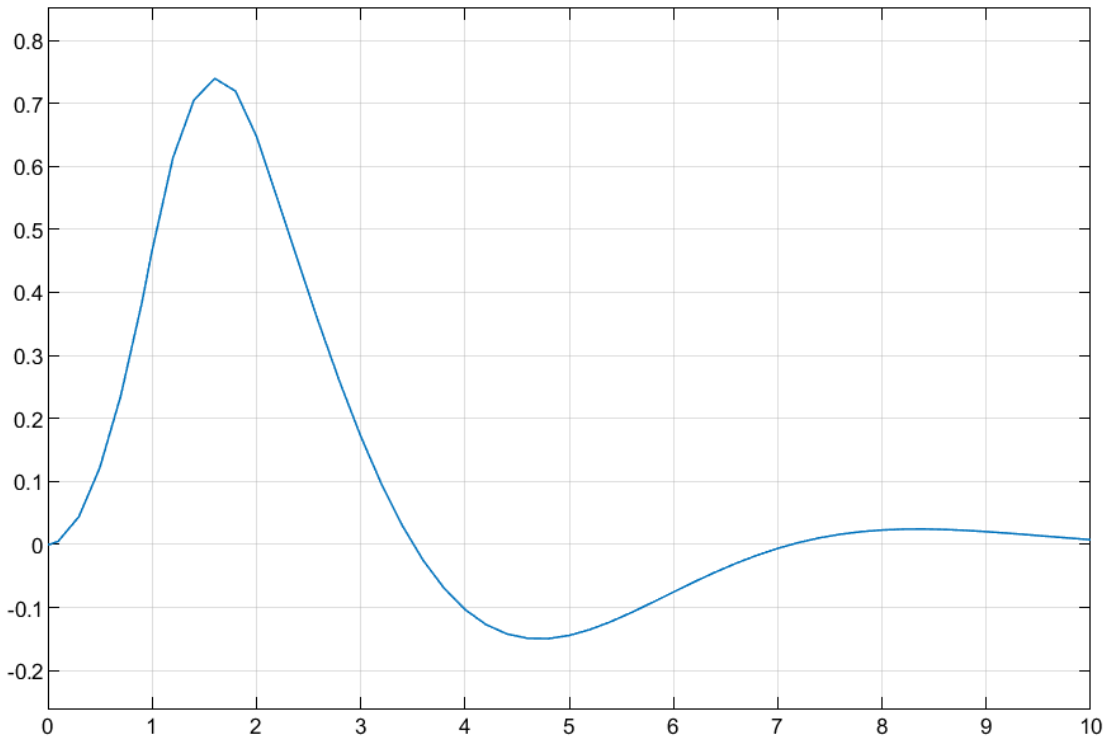




X


1
0.8
0.6
0.4
0.2
0
0 1 2 3 4 5 6 7 8 9 10

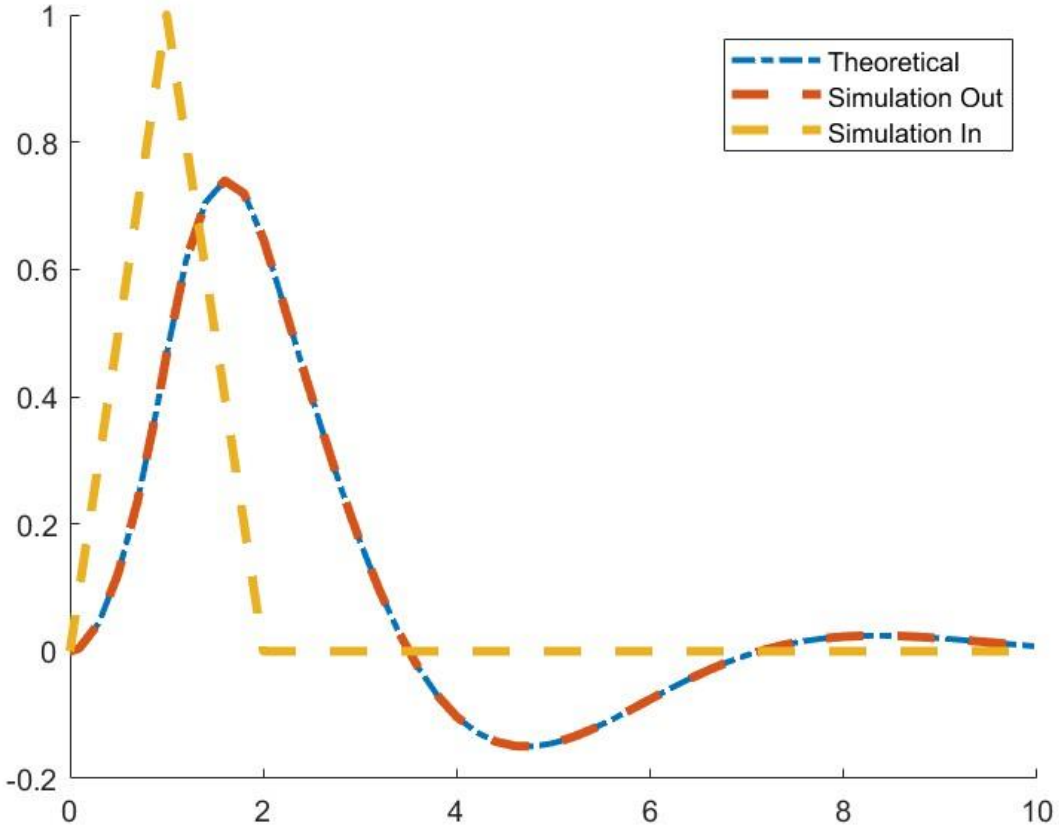
Y


0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
0 1 2 3 4 5 6 7 8 9 10

Problem 5:

- Code:

```
t = out.tout;



a = .5;

w = sqrt(3) / 2;
ws = .75;
q = 1/ w;


c0 = t;
ch1 = (t - 1) .* heaviside(t - 1);
ch2 = (t - 2) .* heaviside(t - 2);

s0 = - q * (exp((-a) * t) .* sin( w * t));
sh1 =  - q * (exp((-a) * (t-1)) .* sin( w * (t-1))) .* heaviside(t - 1);
sh2 = - q * (exp(-a * (t-2)) .* sin( w * (t-2))) .* heaviside(t - 2);


y = ( c0 - 2 * (ch1) + ch2 + s0 - 2 * sh1 + sh2 );









figure(1);
hold on
ps0 = plot(out.tout, y, "-.",'LineWidth',2);
% ps1 = plot(out.tout, y1, "-.",'LineWidth',3);
% ps2 = plot(out.tout, y2, "-.",'LineWidth',3);


ps_sim = plot(out.simout,"--",'LineWidth',3);

legend('Theoretical', 'Simulation Out', 'Simulation In');

hold off



```


Theoretical
Simulation Out
Simulation In
1
0.8
0.6
0.4
0.2
0
-0.2
0
2
4
6
8
10