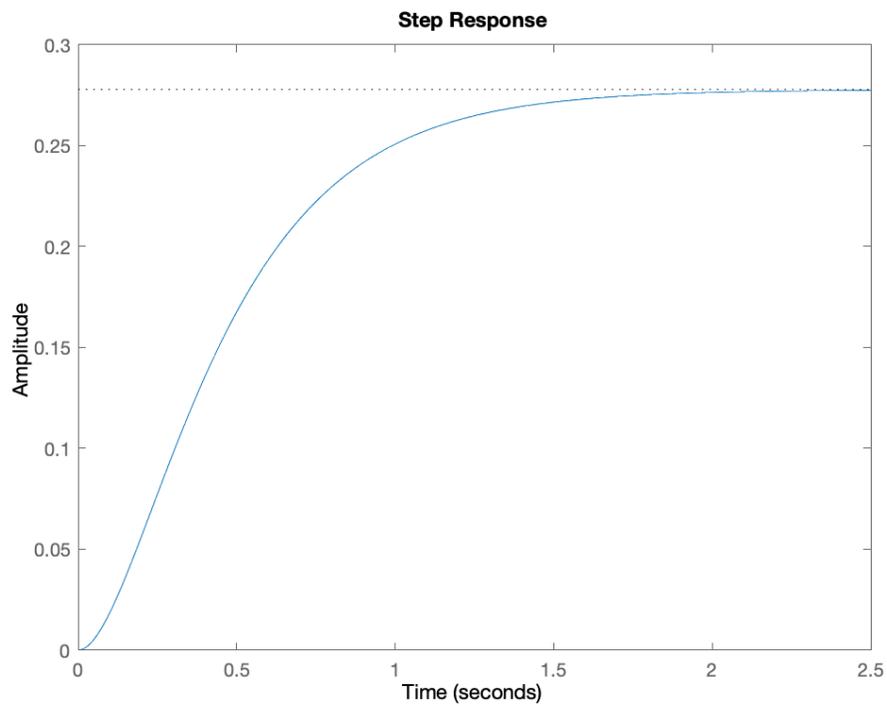


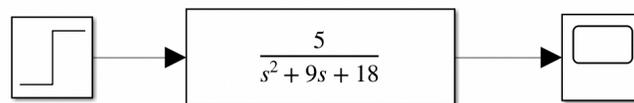
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HW 3 - Key

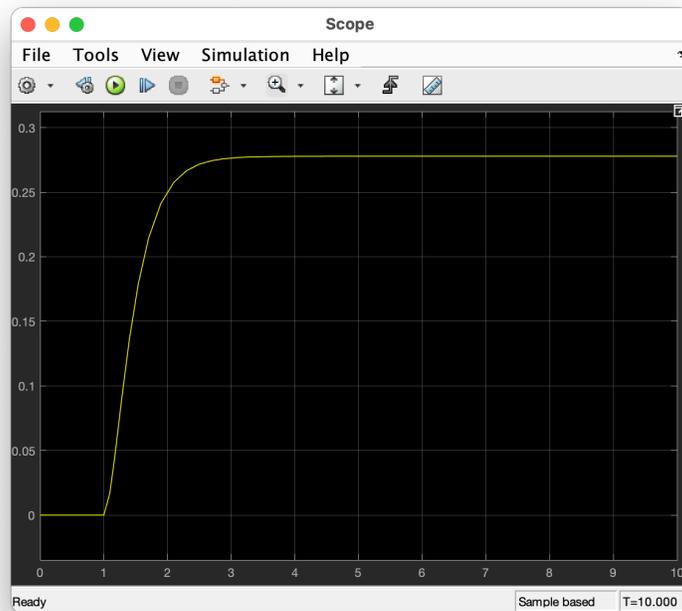
1(a) For each of the transfer functions shown below plot the time response of a unit step input using commands in MATLAB.

```
num = 5;  
den = [1 9 18];  
sys=tf(num,den);  
step(sys);
```



1(b) For each of the transfer functions shown below plot the time response of a unit step input using Simulink.

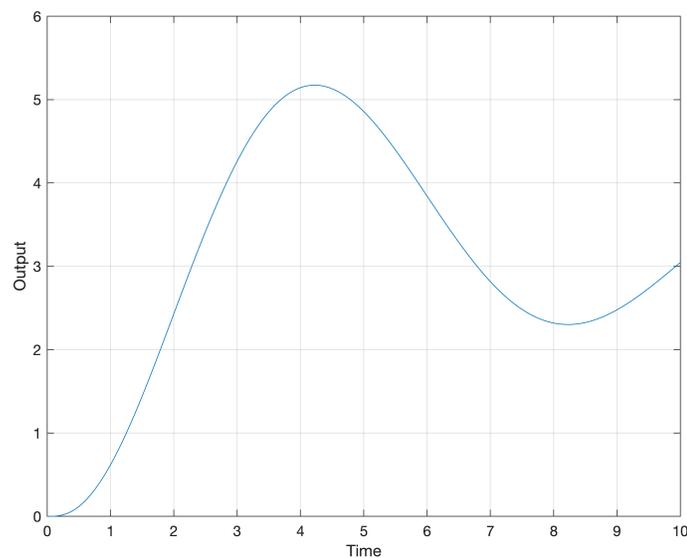




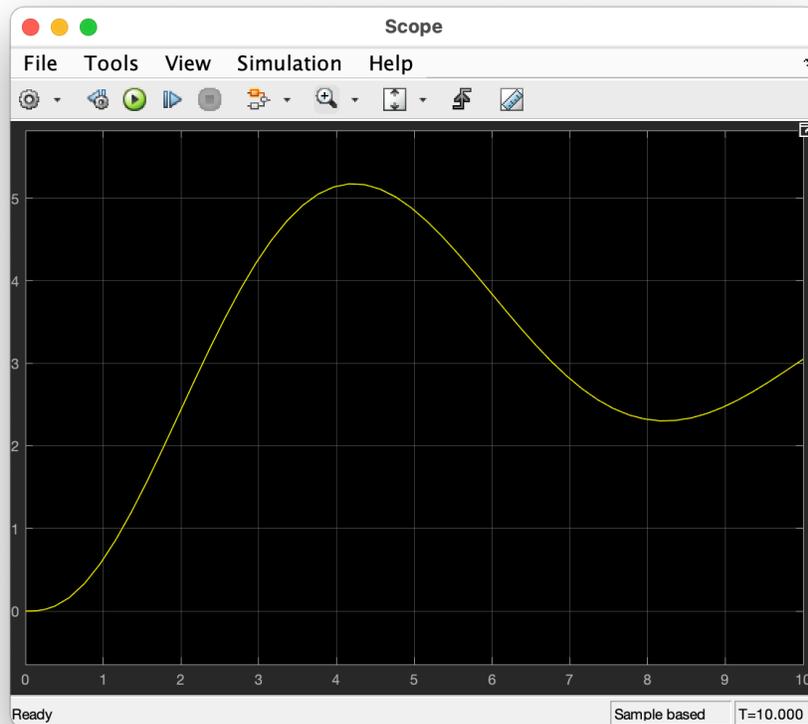
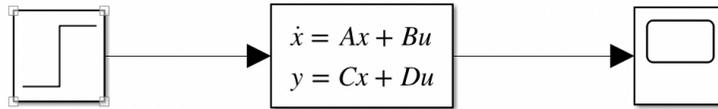
2(a) Find the time response of a unit step input to the SSR shown below using commands in MATLAB.

```
A=[0 1 0; 0 0 1; -3 -2 -5];
B=[0;0;10];
C=[1 0 0];
D=0;
sys=ss(A,B,C,D);
[num,den]=ss2tf(A,B,C,D);

t = 0:0.01:10;
u=heaviside(t);
[y,t] = lsim(sys,u,t);
plot(t,y);
grid on;
xlabel('Time');
ylabel('Output');
```



2(b) Find the time response of a unit step input to the SSR shown below using Simulink.



3

