Homework 3

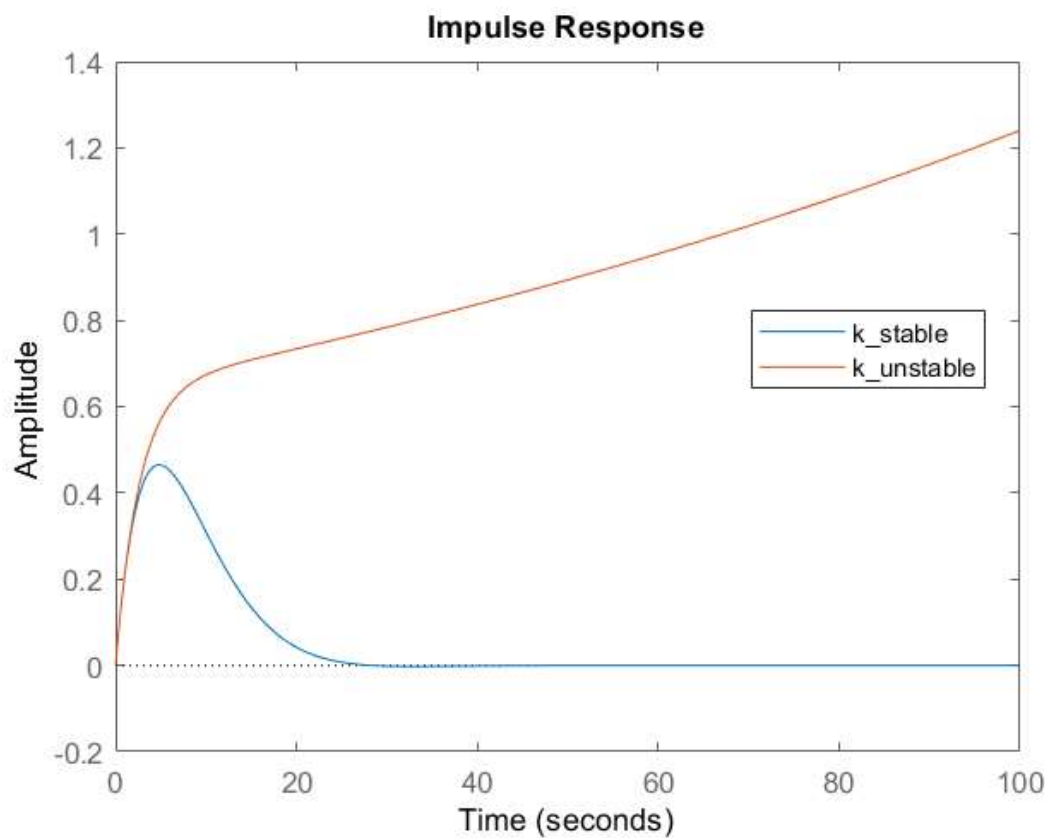## Question 1

```matlab
clc,clear;

k_stable = 10; % N * m^-1
k_unstable = 9.8;
g = 9.81;
m = 1;    % kg
c = 1.5; % N * s * m^-1
l = 2; % m
l1 = 1; % m
t = 0:0.1:100; % 10 seconds of time
figure;
hold on
for k = [k_stable k_unstable]
    G = tf(1, [m * l^2 c * l1^2 (k*l1^2 - m*g)]);
    impulse(G, t)
end
legend("k_{stable}", "k_{unstable}", 'Location', "best")
```


Question 2