Q3

```
clc
clear
close

% Variable definitions and system creation
m = 5; % Slider mass
M = 25000; % Container mass
l = 8; % Rope length
g = 9.81; % Acceleration due to gravity

% System Matrix
A = [0 1 0 0; 0 0 (M*g/m) 0; 0 0 0 1; 0 0 -((1 + (M/m))*g/l) 0];
B = [0; 1/m; 0; -1/(m*l)];
C = [1 0 0 0];
D = 0;

[num,den] = ss2tf(A,B,C,D);
num
```

num = 1×5
           0   0   0.2000   0   0.2453

den

den = 1×5
10³ ×
    0.0010   0   6.1325   0   0