

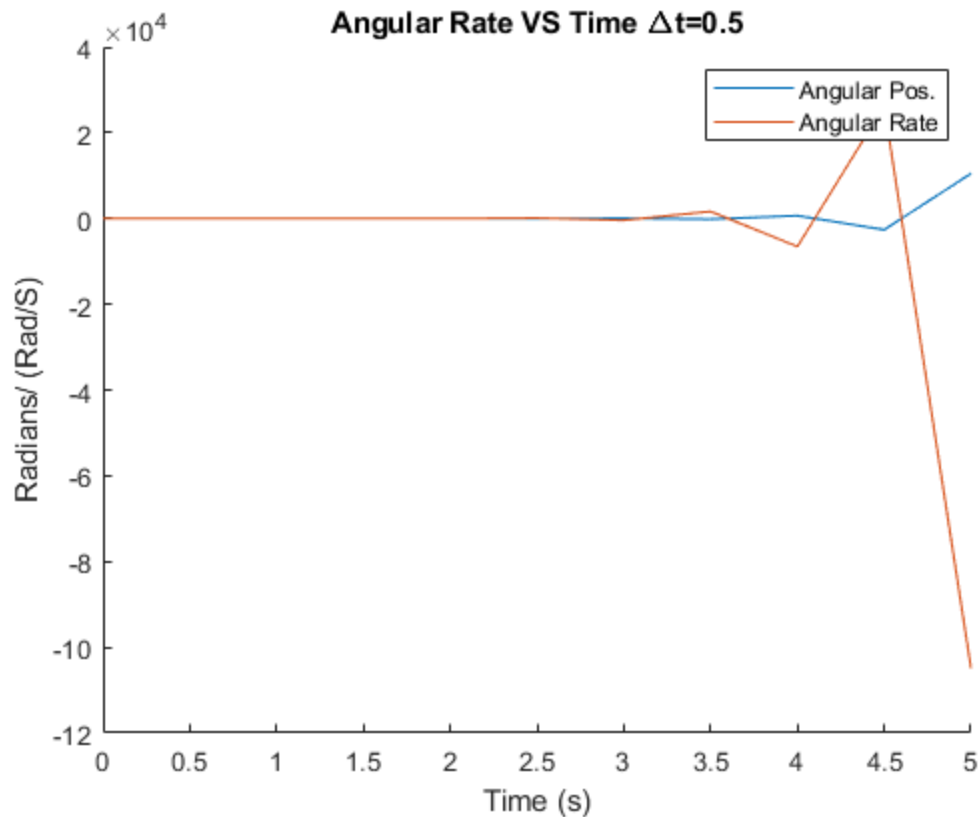
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## Problem 2

```
clear all;close all;clc
J = 10;
F = 100;
T = 10;
x = [0;0];

A = [0 1;0 -F/J];
B = [0;1/J];

dx = 0.5;
for i = 1:(5/dx)
    xdot = A*x(:,i) + B*T;
    x(:,i+1) = x(:,i) + xdot*dx;
end
t = 0:dx:5;
figure
hold on
plot(t,x(1,:))
title('Angular Position (rads)')
xlabel('Time (s)')
ylabel('Radians/ (Rad/S)')
plot(t,x(2,:))
title('Angular Rate VS Time \Deltat=0.5')
legend('Angular Pos.','Angular Rate')
```



## Solving system using ss and lsim

```
J = 10; F = 100; A = [0 1; 0 -F/J]; B = [0; 1/J]; C = [1 0; 0 1]; D = [0; 0]; T = 10; sys = ss(A,B,C,D);
```

```
dt = 0.005;
```

```
t = [0:dt:5];
```

```
u = ones(length(t),1)*T;
```

```
lsim(sys,u,t)
```

```
[V,D] = eig(A);
```

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