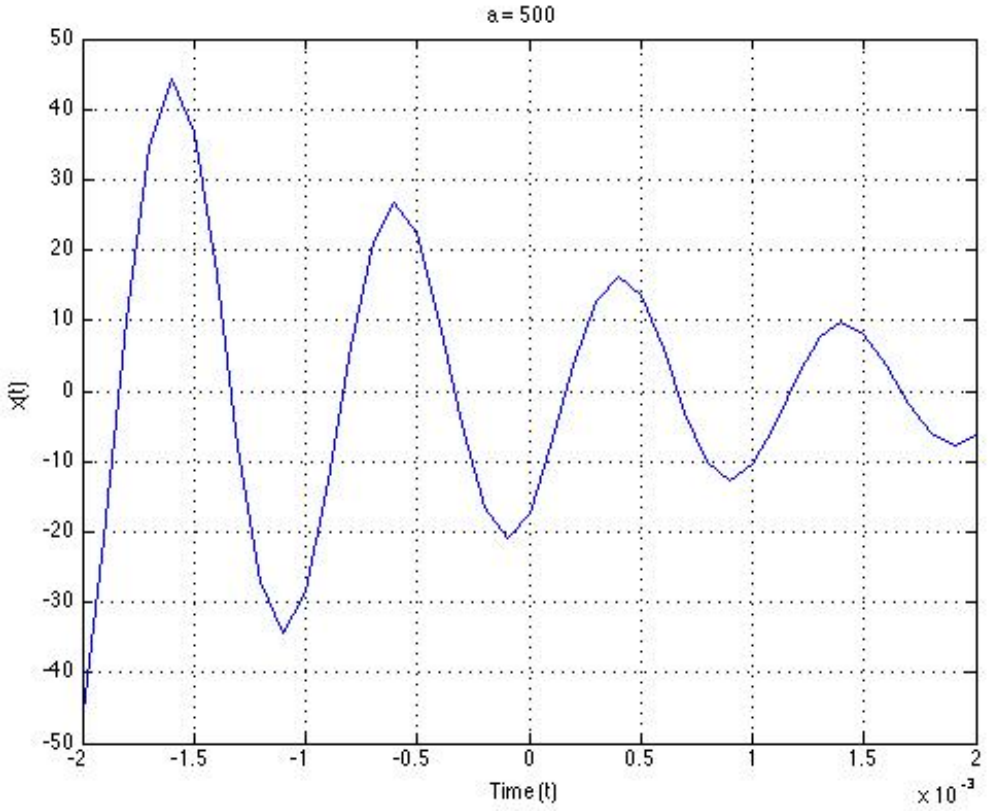
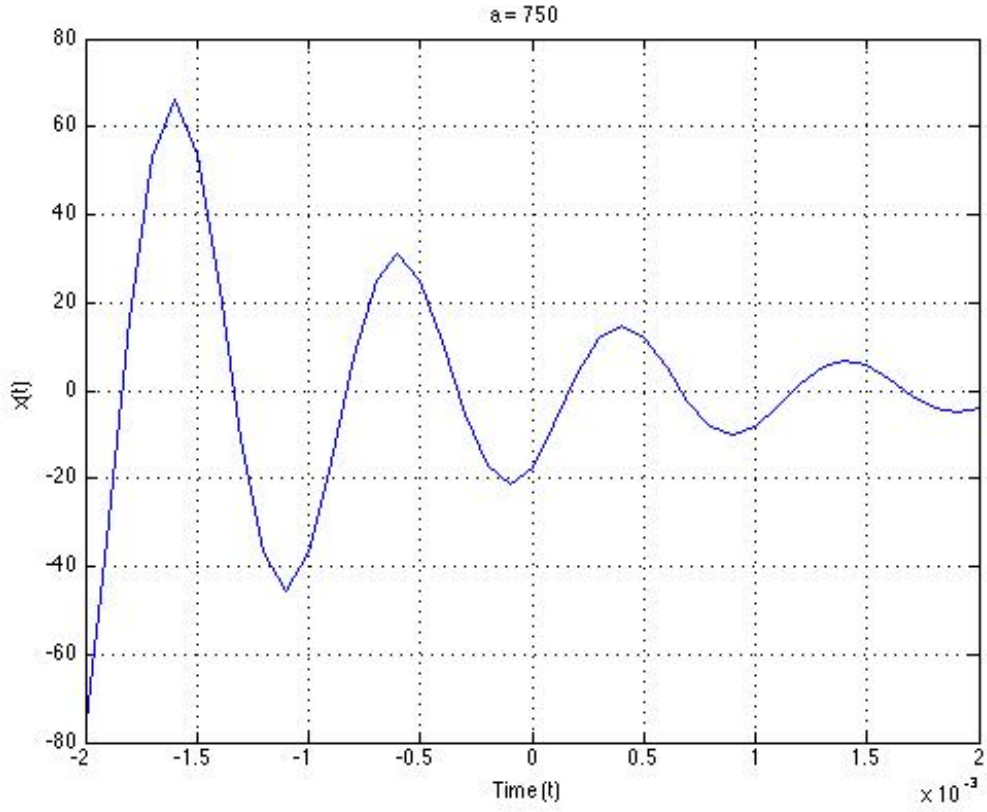
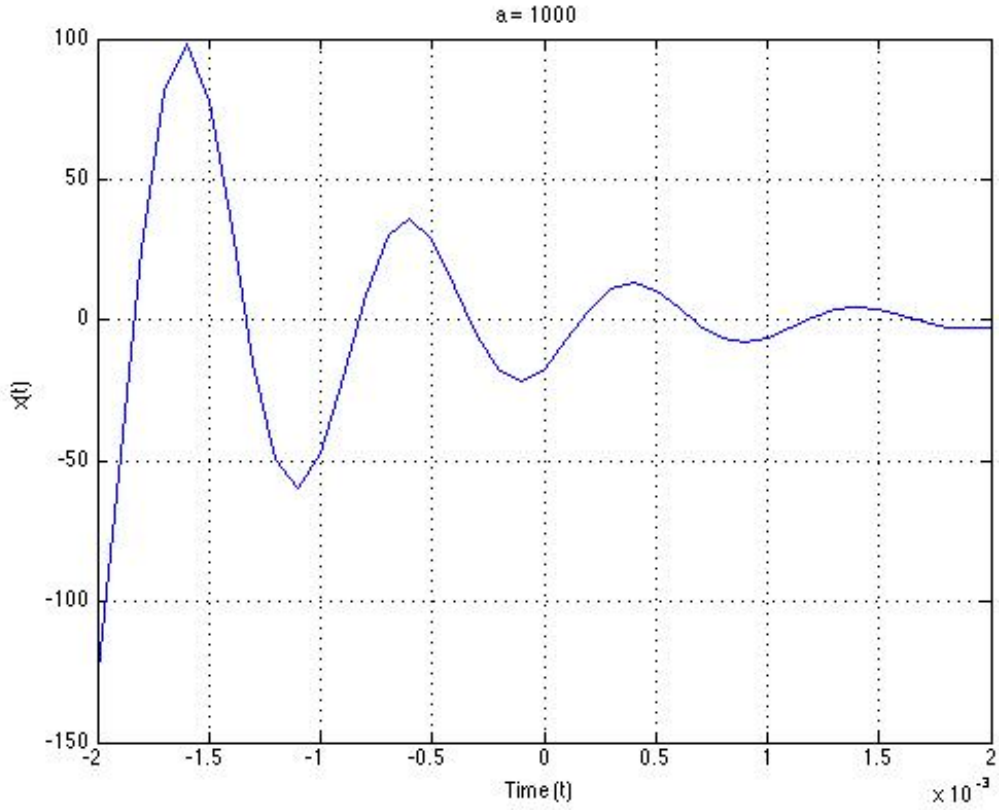
EE 301 HW2 Problem 7




a = 750
80
60
40
20
0
-20
-40
-60
-80
x(t)
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
Time (t)
x 10 -3


a = 1000
100
50
0
-50
-100
-150
x(t)
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
Time (t)
x 10 -3

```
%EE301 HW2

clc
clear all
close all

%Change in time vector
dtau = 0.0001;

%Time vector
t=-2e-3:dtau:2e-3;

%Function
x=inline('20*sin(2*pi*1000*t-pi/3).*exp(-500*t)');

%Plotting x(t)
figure
plot(t,x(t));
hold all
grid

xlabel('Time (t)');
ylabel('x(t)');
title('a = 500');
```

The effect of varying *a* on the signal *x(t)* is seen on the damping of every different system on the graph. As *a* increases, the time it takes the system to damp decreases. Furthermore, the initial amplitude of the system is larger, but as time increases it damps faster.