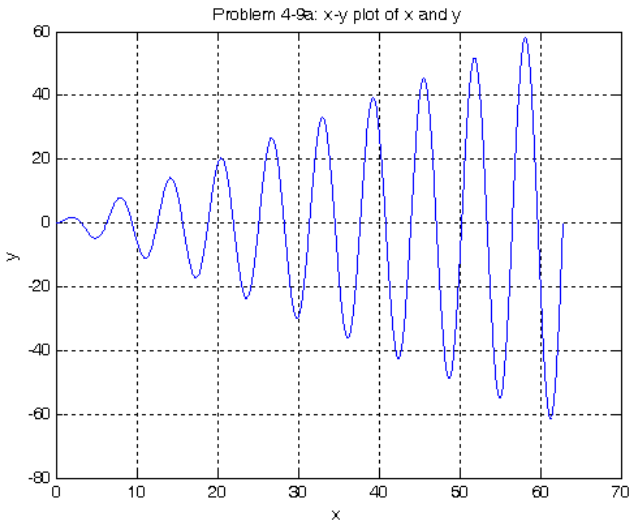
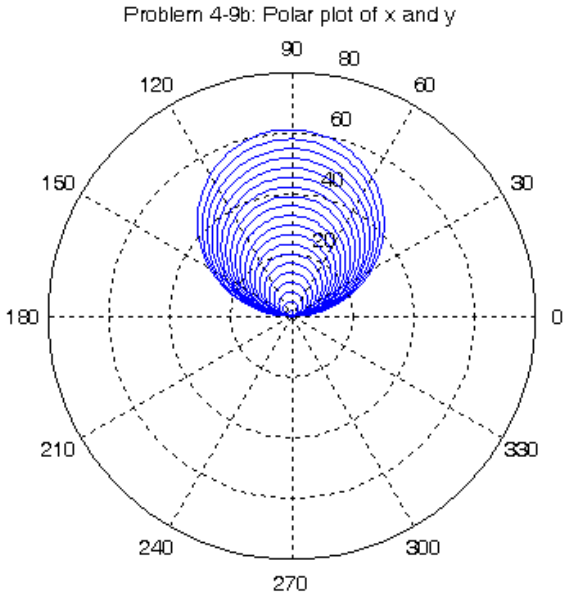
EE322 Fall 08 Homework Problem Set 6 (PS06) SOLUTIONS

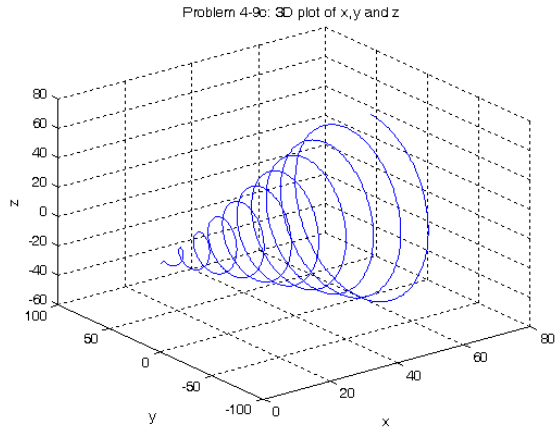
All problems are from “Introduction to MATLAB 7” by Etter et al.

1. Ch. 4, Problem 9.

```
x=0:pi/100:20*pi;

y=x.*sin(x);
z=x.*cos(x);
% Part (a):
figure(1),plot(x,y);,grid on, xlabel('x'),ylabel('y'),title('Problem 4-9a: x-y
plot of x and y')
% Part (b):
figure(1),polar(x,y);,grid on,title('Problem 4-9b: Polar plot of x and y')
% Part (c):
figure(1),plot3(x,y,z),xlabel('x'),ylabel('y'),zlabel('z'), title('Problem 4-9c:
3D plot of x,y and z'),grid on
```

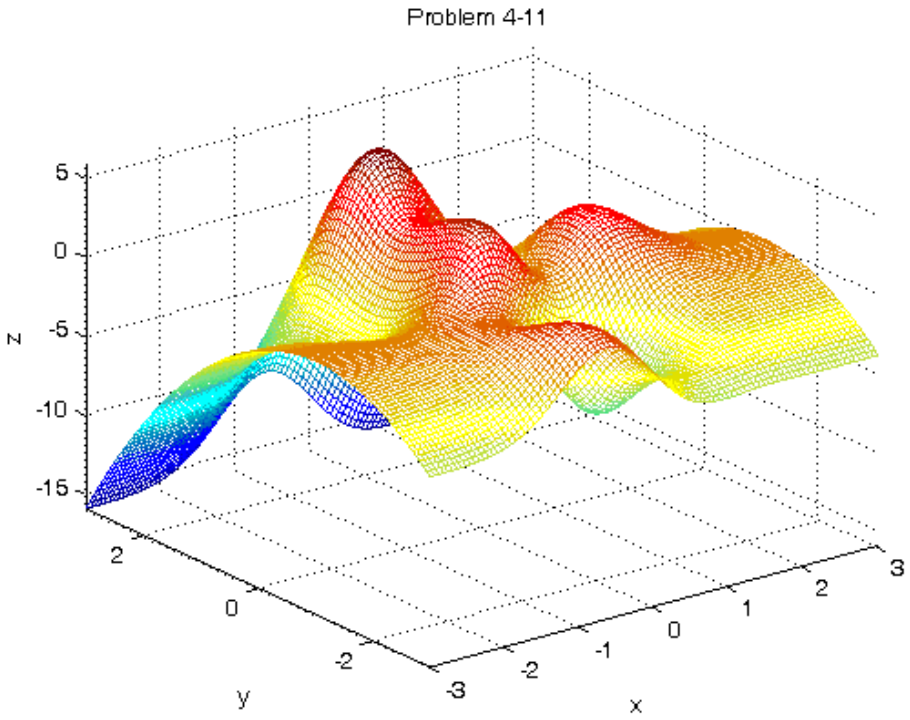






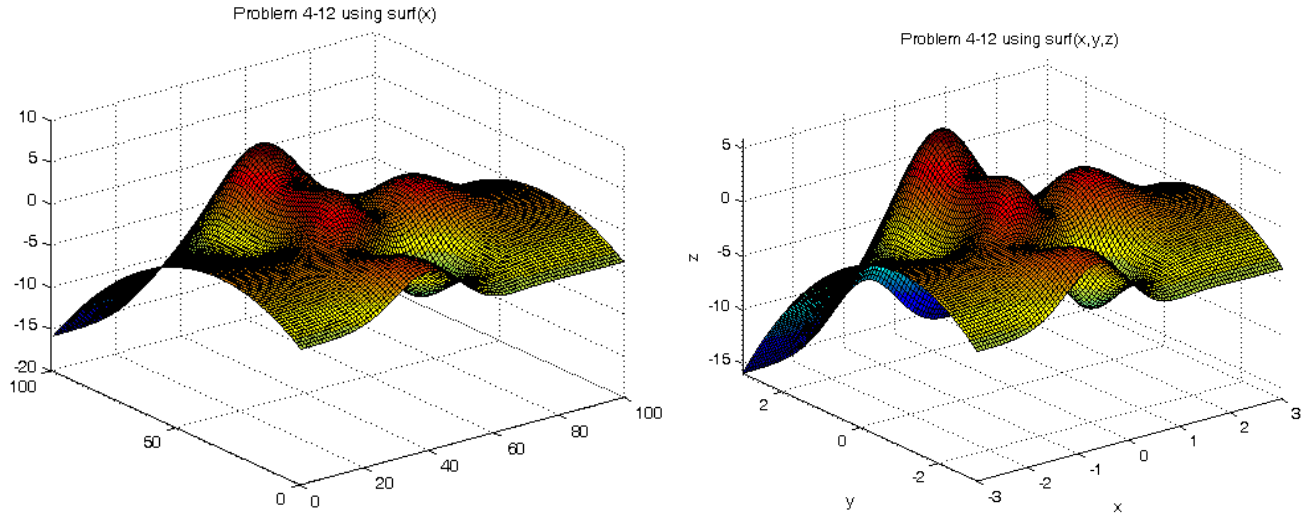
2. Ch. 4, Problem 11.

```
X=linspace(-3,3,100);
Y=X;

[x,y]=meshgrid(X,Y);
z=3*(1-x).^2 .* exp(-(x.^2))-(y+1).^2 ...
 -10*(x/5-x.^3-y.^5).*exp(-x.^2-y.^2) ...
     -1/3*exp(-(x+1).^2 -y.^2);

figure(1),mesh(X,Y,z),xlabel('x'),ylabel('y'),zlabel('z'),axis([-3 3 -3 3
min(z(:)) max(z(:))])
title('Problem 4-11')
```



3. Ch. 4, Problem 12.

```
figure(1),surf(z),title('Problem 4-12 using surf(x)')
figure(2),surf(x,y,z),xlabel('x'),ylabel('y'),zlabel('z'),axis([-3 3 -3 3
min(z(:)) max(z(:))])
title('Problem 4-12 using surf(x,y,z)')
```



Note: if you look closely, the x and y axis have different values between the two plots…surf(x,y,z) gives the correct axes, since both x and y were supposed to range from -3 to +3, but surf(z) instead puts indices on the x and y axes (e.g., 1,2,3,4,…100).

4. Ch. 4, Problem 14

```
%   Problem 4-14
figure(1),contour(z),xlabel('x'),ylabel('y'),title('Problem 4-14')
```