Probability and Statistics – HW6 Matlab

1. Bivariate Normal Distribution

(a) **MyBinom.m**

function [f] = MyBinom(x, y, miuX, sigmaX, miuY, sigmaY, rho)

z = ((x-miuX)^2 / sigmaX^2) + ((y-miuY)^2 / sigmaY^2) - (2\*rho\*(x-miuX)\*(y-miuY)/(sigmaX\*sigmaY));

f = (1/(2\*pi\*sigmaX\*sigmaY\*sqrt(1-rho^2)))\*exp(-z/(2\*(1-rho^2)));

end

**HW6.m section 1.(a)**

%%1.(a)

miuX = 50;

sigmaX = 20;

miuY = 1500;

sigmaY = 200;

rho = [0 0.3 0.8 -0.8];

rangeX = 0:100;

rangeY = 1000:2000;

C = zeros(1000,100);

for k = 1:4

for i = 1:1000

for j = 1:100

C(i,j) = MyBinom(rangeX(j), rangeY(i) , miuX, sigmaX, miuY, sigmaY, rho(k));

end

end

figure;

imagesc([0 100], [1000 2000], C);

colormap(jet);

colorbar;

title(['\rho = ' num2str(rho(k))]);

xlabel('range x');

ylabel('range y');

end







