syms x y;

% Define the joint PDF f(x, y)

f = x +y ; % for 0<=x<=1 and 0 <= y <= 1

% Define the expected values

E\_X = int(int(x\* f, y, 0, 1), x, 0, 1); % E[X]

E\_Y=int(int(y \* f,y,0,1),x,0,1) % E[Y]

E\_XY =int(int(x \* y \* f,y,0,1),x,0,1); % E[XY]

% Calculate variance of X and Y

E\_X2 = int(int(x^2 \* f, y, 0, 1), x, 0, 1); % E[X^2]

E\_Y2 = int(int(y^2 \* f, y, 0, 1), x, 0, 1); % E[Y^2]

Var\_X = E\_X2 - E\_X^2; % Variance of X

Var\_Y = E\_Y2 - E\_Y^2; % Variance of Y

% Calculate covariance of X and Y

Cov\_XY = E\_XY - E\_X \* E\_Y;

% Calculate the correlation coefficient

r\_XY =Cov\_XY / sqrt(Var\_X \* Var\_Y);

% Display the result

disp('The correlation coefficient r(X, Y) is:');

disp(r\_XY);