Hw5matlab

Code

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| clear all;  close all;    trial = 10000;  myarray = rand(1,trial);    mymatrix = zeros(2,2);    for i = 1:trial  if(myarray(i)<=1/8)  mymatrix(1,1) = mymatrix(1,1)+1;  elseif(myarray(i)>1/8 && myarray(i)<=2/8)  mymatrix(1,2) = mymatrix(1,2)+1;  elseif(myarray(i)>2/8 && myarray(i)<=4/8)  mymatrix(2,1) = mymatrix(2,1)+1;  else  mymatrix(2,2) = mymatrix(2,2)+1;  end  end    mymatrix = mymatrix/trial    % figure(1);  % bar3(mymatrix);  % xlabel('y value');  % ylabel('x value');  % zlabel('PMF');  % title('Original Joint PMF');    x\_marg = sum(mymatrix)    y\_condition\_x0 = zeros(1,2);  for i = 1:trial  if(myarray(i)<=1/3)  y\_condition\_x0(1,1) = y\_condition\_x0(1,1)+1;  else  y\_condition\_x0(1,2) = y\_condition\_x0(1,2)+1;  end  end  y\_condition\_x0 = y\_condition\_x0/trial    y\_condition\_x1 = zeros(1,2);  for i = 1:trial  if(myarray(i)<=1/5)  y\_condition\_x1(1,1) = y\_condition\_x1(1,1)+1;  else  y\_condition\_x1(1,2) = y\_condition\_x1(1,2)+1;  end  end  y\_condition\_x1 = y\_condition\_x1/trial    y\_condition = zeros(2,2);  y\_condition(1,1) = y\_condition\_x0(1)\*x\_marg(1);  y\_condition(2,1) = y\_condition\_x0(2)\*x\_marg(1);  y\_condition(1,2) = y\_condition\_x1(1)\*x\_marg(2);  y\_condition(2,2) = y\_condition\_x1(2)\*x\_marg(2);  y\_condition    x\_exp\_analytic = 3/8\*0 + 5/8\*1    x\_exp\_simulated = 0\*x\_marg(1) + 1\*x\_marg(2)    x\_var\_analytic = (0-x\_exp\_analytic)^2\*3/8 + (1-x\_exp\_analytic)^2\*5/8    x\_var\_simulated = (0-x\_exp\_simulated)^2\*x\_marg(1) + (1-x\_exp\_simulated)^2\*x\_marg(2) |

Result

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| >> hw5matlab  mymatrix =  0.1291 0.1263  0.2451 0.4995  x\_marg =  0.3742 0.6258  y\_condition\_x0 =  0.3376 0.6624  y\_condition\_x1 =  0.2036 0.7964  y\_condition =  0.1263 0.1274  0.2479 0.4984  x\_exp\_analytic =  0.6250  x\_exp\_simulated =  0.6258  x\_var\_analytic =  0.2344  x\_var\_simulated =  0.2342 |