Hw11 Matlab

11.

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| clear all;  close all;    trials = 10000;    Nvec=[1 2 3 5 10 100];    y = zeros(length(Nvec),trials);    for i=1:length(Nvec)  for j=1:Nvec(i)  y(i,:)=y(i,:)+rand([1 trials]);  end  ymean(i) = mean(y(i,:));  yvar(i) = var(y(i,:));  ystd(i) = std(y(i,:));  end    figure(1);  for i=1:length(Nvec)  subplot(3,2,i);  [yout xout] = hist(y(i,:),50);  area = sum(yout)\*(xout(2)-xout(1));  hold on;  bar(xout,yout/area);  X=0:.01:Nvec(i);  plot(X, normpdf(X,ymean(i),ystd(i)));  hold off;  end |
| a)  ymean =  0.5037 0.9971 1.4955 2.4992 5.0075 49.9778  ystd =  0.2884 0.4130 0.5026 0.6415 0.9082 2.8823  yvar =  0.0832 0.1705 0.2526 0.4116 0.8249 8.3078  b), c)    d) At first, the Gaussian and histogram don’t match, but as the number of samples get higher, they become look more alike.  e)Yes, they agree. |

12.

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| clear all;  close all;    trials = 10000;    Nvec=[1 2 3 5 10 100];    y = zeros(length(Nvec),trials);    for i=1:length(Nvec)  for j=1:Nvec(i)  y(i,:)=y(i,:)+random('exponential',1,[1 trials]);  end  ymean(i) = mean(y(i,:));  yvar(i) = var(y(i,:));  ystd(i) = std(y(i,:));  end    figure(1);  for i=1:length(Nvec)  subplot(3,2,i);  [yout xout] = hist(y(i,:),50);  area = sum(yout)\*(xout(2)-xout(1));  hold on;  bar(xout,yout/area);  X=0:.01:Nvec(i);  plot(X, normpdf(X,ymean(i),ystd(i)));  hold off;  end    ymean  ystd  yvar |
| a)  ymean =  1.0009 1.9791 3.0070 4.9942 9.9757 100.1137  ystd =  0.9890 1.3889 1.7275 2.1883 3.1791 10.0202  yvar =  0.9780 1.9291 2.9844 4.7888 10.1068 100.4042  b), c)    d) At first, the Gaussian and histogram don’t match, but as the number of samples get higher, they become look more alike.  e)Yes, they agree. |