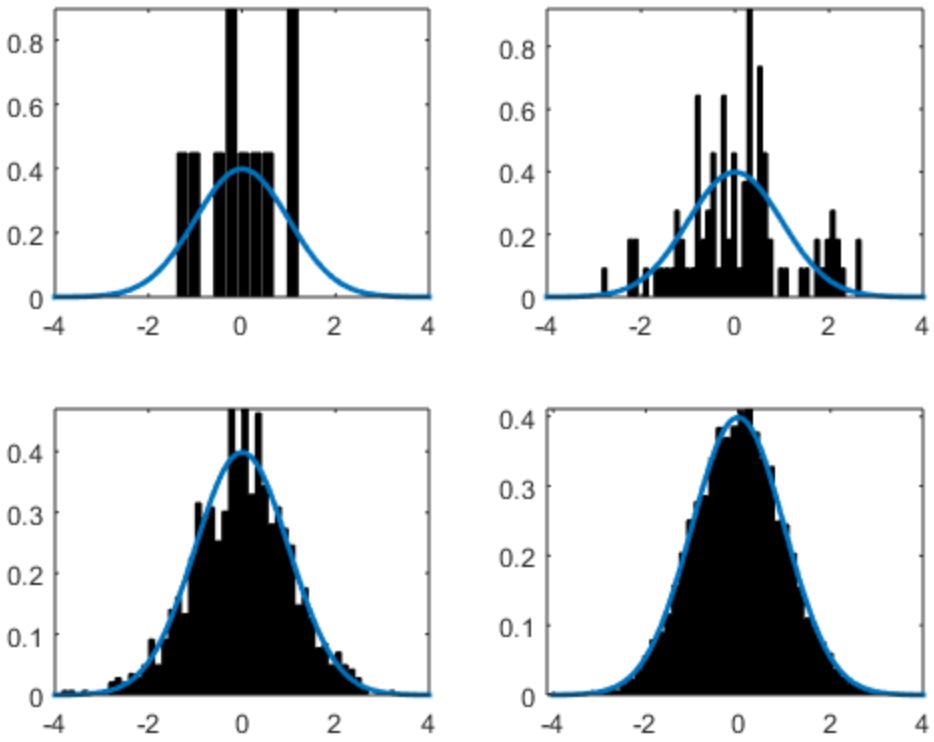
```
% Lab1, Exercise 1 - parts (b.) and (c.)
% plot normalised empirical density for the normal distribution
% we also plot the true density on the same axes
N = [10 100 1000 10000];
for i=1:4
    % f is the frequency, x denotes the bin centers (returned by hist)
    % randn generates normal random numbers
    [f,x] = hist(randn(N(1,i),1),min(N(1,i),50));
    % we use trapz for normalisation of the area under the histogram
    subplot(2,2,i), bar(x,f/trapz(x,f)), colormap(bone);
    % "help graph3d" for more colormap options, may not be available
 on
    % older versions of MATLAB
    t = -4:0.1:4;
    % now plot the true pdf on the same axes
    pdf = (1/sqrt(2*pi)).*exp(-0.5*t.^2);
    % hold on tells MATLAB to use the previous axes
    hold on, subplot(2,2,i),plot(t,pdf,'LineWidth',2);
    axis tight;
end
```



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