

```

0001 clear all
0002 LineWidth = 2;
0003 MarkerSize = 7;
0004
0005 FontSizeLabels = 12;
0006 FontSizeLegend = 10;
0007
0008 N = 100;
0009 Mean = 10; Sigma = 5;
0010 %
0011 % general N samples of a random variable - say normal with mean Mean and ...
0012 % std Sigma
0013 x = Sigma*randn(1,N) + Mean;
0014 [F,xF] = ecdf(x); % compute emperical cdf - you can use hist as well!!
0015 F_n = norminv(F);
0016 %
0017 % compute the "analytical cdf" using table lookup or numerical integration
0018 xx = linspace(Mean-4*Sigma,Mean+4*Sigma,100);
0019 yy = normcdf(xx,Mean,Sigma);
0020 yy_n = norminv(yy);
0021 %
0022 % plot on a normal probability paper
0023 figure(1); clf % clear the figure
0024 h = plot(xF, F_n, 'or', xx, yy_n, '-b');
0025 ylabel1 = [1e-6 1e-5 1e-4 1e-3 0.01 0.1 0.2 0.5 0.7 0.9 0.99 ...
0026           0.999 0.9999 1-1e-5 1-1e-6];
0027 ylabel2 = {'1e-6', '1e-5', '1e-4', '1e-3', '0.01', '0.1', '0.2', '0.5', '0.7', '0.9', '0.99' ...
0028           '0.999', '0.9999', '1-1e-5', '1-1e-6'};
0029 xlabel1 = [-15:5:40];
0030 set(gca,'YTick',norminv(ylabel1)); set(gca,'YTickLabel',ylabel2);
0031 set(gca,'XTick',xlabel1); set(gca,'XTickLabel',xlabel1);
0032 set(gca, 'FontSize', FontSizeLabels);
0033 xlabel('x'); ylabel('probability distribution function');
0034 set(h, 'LineWidth', LineWidth, 'MarkerSize', MarkerSize);
0035 hl = legend('emperical', 'analytical', 'Location', 'NorthWest');
0036 set(hl, 'FontSize', FontSizeLegend);
0037 axis([-15 40 min(norminv(ylabel1)) -min(norminv(ylabel1))]);

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