%lab\_1\_prob\_2.m

format compact

nobs = 1000;

rng('default');

x = -1 + 2\*randn(nobs,1);

xbar=mean(x)

moments=mean([(x-xbar).^2 (x-xbar).^3 (x-xbar).^4])

mu2 = mean((x-xbar).^2)

mu3 = mean((x-xbar).^3)

mu4 = mean((x-xbar).^4)

sample\_stdev=sqrt(mu2-xbar^2)

sample\_skew=mu3/(mu2)^(3/2)

sample\_kurt=mu4/(mu2)^2

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%lab\_1\_prob\_2\_calcmoments.m

format compact

syms sigma mu s

mgf = exp(-1\*s + (2^2\*s^2)/2);

mom1 = (subs(diff(mgf,s,1),s,0))

mom2 = (subs(diff(mgf,s,2),s,0))

mom3 = (subs(diff(mgf,s,3),s,0))

mom4 = (subs(diff(mgf,s,4),s,0))

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%lab\_1\_prob\_3and4.m

format compact

%Problem 3d

syms w s n

mgf = (exp(w\*(exp(s)-1)))^2

cgf = log(mgf)

k1 = subs(diff(cgf,s,1),s,0)

k2 = subs(diff(cgf,s,2),s,0)

k3 = subs(diff(cgf,s,3),s,0)

k4 = subs(diff(cgf,s,4),s,0)

%%

%Problem 4

syms s

cgf = log(sqrt(1/(1-2\*s)))

k1 = subs(diff(cgf,s,1),s,0)

k2 = subs(diff(cgf,s,2),s,0)