clc; clear all; close all;

% gauss distribution for downstream's water demand of Three Geogres Dam

mean = 1152;

stdev = 440;

% initialize stock-out cost, holding cost and optimal solution

s = 0.005344;

c = 0.022243;

optimal = 841;

% Monte Carlo Simulation

nums = 500;

tc = zeros(1, nums);

r0 = randn(1, nums);

r = r0\*stdev+mean;

r(r<0) = [];

tc = c\*(optimal-r).\*(optimal>=r)+s\*(r-optimal).\*(r>optimal);

% plot the simulation graph

x = 0:0.01:3000;

y = 1/(stdev\*sqrt(2\*pi))\*exp(-(x-mean).\*(x-mean)/(2\*stdev\*stdev));

[AX,H1,H2] = plotyy(r,tc,x,y)

set(get(AX(1),'Ylabel'),'String','Left Y-axis')

set(get(AX(2),'Ylabel'),'String','Right Y-axis')

set(H1,'LineStyle','\*')

set(H2,'LineStyle','-')

axis([0,3000])