Plotting isoclines and direction lines.

%1-) A simple matlab clip. For dy=x*exp(-(x^2+y^2));
[x, y] = meshgrid(-2:.2:2,-1:.15:1); % x and y indices of region.
f = @(x, y) (x .* exp(-x.^2 - y.^2)); % in line function.
%This is what I told you. You could have solved this line straightforward as well.
dy = f(x,y); % differential.
dx = ones(size(z)); %dy=x.^2-y;
dyu=dy./sqrt(dy.^2+dx.^2);
dxu=dx./sqrt(dy.^2+dx.^2);
contour(x,y,dy), hold on
quiver(x,y,dxu,dyu) hold off.
figure(2), mesh(dy).
% your mission
% 1-compare this to the script given in help contour example of matlab. Due date Monday.
% 2- plot isoclones and direction lines for Due date next Thursday.
  % a) dy = 0.5*y; try intervals applicable yourself.
  % b) dy = x-y;
  % c) dy = x*t;
  % d) dy = 0.5y+y^2+sin(t); where -pi $\leq$ t $\leq$pi. Δt = pi/5;
% learn dsolve, and relation between dsolve and diff.

Note: One student asked a question on 2nd order DE's using dsolve, the answer was including a character 'i', in matlab 'i' is reserved for complex number sqrt(-1), therefore complex is in the onswer, easy to solve numerically as well, as he was asking, with your calculus if you can recall from your high school the roots of discriminant. The same methodis applied for 2nd Order Linear ODEs. If you wish to pursue please proceed to 2nd and 3rd chapters yourself or from any other source you are happy with.

DE 255, Dr. Sakalli