Suppose we have the following boundary value problem:

$$y'' - \frac{5y'}{e^x + 1} = 0 \text{ where } y(0.1) = 10 \text{ and } y(1) = 1$$

We defined a function that returned dy/dx and dy'/dx as a column vector. Test that this function works using the ode45 solver.

Here is the function:

```
function ydot = model(x,y)
ydot = zeros(2,1);
ydot(1) = y(2);                      % dy/dt
ydot(2) = 5*y(2)/(exp(x)+1);         % dy'/dt
end
```

We drive the function so to speak by using the root finder fzero to find the first derivative along the domain at 0.1.

```
yp0 = fzero(@optim,1); %1 is the guess at finding the root supplies
variable 'root_guess'

function driver = optim(root_guess)
[x,y]  = ode45(@model,[0.1,7],[0,root_sguess]);
driver = y(end,1)-10;              %difference should be zero
end
%% Solve using the Shooting Method
domain = linspace(0.1,1,1000);
[x,y] = ode45(@model, domain, [0,yp0]);
```

Plot the functions y versus x and y' versus x.