Consider the following system of 3 nonlinear equations for x, y and z:

$$xy = z^2 + 1$$

$$xyz + y^2 = x^2 + 2$$

$$e^x + z = e^y + 3$$

Write a MATLAB program as follows:

Call the function newton3 to calculate x, y and z. Use 2, 1.5, 1 as the initial guesses for x, y, z and 1e-7 as the accuracy factor.

The output of this program should look like this:

x=1.77767 y=1.42396 z=1.23747

main program

```
% Name (first and last)
% CSC 2262
% cs2262xx
% Sample 3
guess1 = 2;
guess2 = 1.5;
guess3 = 1;
accuracy = 1e-7;
f1 = @(x,y,z) x*y - z^2 - 1;
f2 = @(x,y,z) x*y*z + y^2 - x^2 - 2;
f3 = @(x,y,z) exp(x) + z - exp(y) - 3;
df1dx = @(x,y,z)  y;
df1dy = @(x,y,z)  x;
df1dz = @(x,y,z)  -2*z;
df2dx = @(x,y,z)  y*z - 2*x;
df2dy = @(x,y,z)  x*z + 2*y;
df2dz = @(x,y,z)  x*y;
df3dx = @(x,y,z)  exp(x);
df3dy = @(x,y,z)  -exp(y);
df3dz = @(x,y,z)  1;
[x,y,z]=newton3(f1,f2,f3,df1dx,df1dy,df1dz,df2dx,df2dy,df2dz, ...
               df3dx,df3dy,df3dz,guess1,guess2,guess3,accuracy);
fprintf('x=%.5f  y=%.5f  z=%.5f\n',x,y,z);
```