Problem #1: calcpml2d() function

Write a MATLAB function to calculate the UPML parameters $sx$ and $sy$ on a 2D grid. Follow Lecture 8 with the following parameters for the UPML: $a_{\text{max}} = 3$, $\sigma_{\text{max}} = 1$, and $p = 3$. Note that $sx$ and $sy$ are not matrices here; they are 2D arrays. Use the following header:

```matlab
function [sx,sy] = calcpml2d(NGRID,NPML)
% CALCPML2D      Calculate the PML parameters on a 2D grid
% [% [sx,sy] = calcpml2d(NGRID,NPML);
% This MATLAB function calculates the PML parameters sx and sy
% to absorb outgoing waves on a 2D grid.
% Input Arguments
% =============
% NGRID Array containing the number of points in the grid
% = [ Nx Ny ]
% NPML Array containing the size of the PML at each boundary
% = [ Nxlo Nxhi Nylo Nyhi ]
% Output Arguments
% ===============
% sx,sy 2D arrays containing the PML parameters on a 2D grid

% I have verified that my function is working correctly by using test_calcpml2d.p.
```

Problem #2: yeeder() function

Write a MATLAB function that calculates the derivative matrices $D_x^e$, $D_y^e$, $D_x^h$, and $D_y^h$ which calculate second-order accurate first-order derivatives across a two-dimensional Yee grid. Write your function so that the input argument $kinc$ only needs to be provided when it is needed (i.e. BC=-2). Use the following header:

```matlab
function [DEX,DEY,DHX,DHY] = yeeder(NGRID,RES,BC,kinc)
% YEEDER      Construct Yee Grid Derivative Operators on a 2D Grid
% [% [DEX,DEY,DHX,DHY] = yeeder(NGRID,RES,BC,kinc);
% Note for normalized grid, use this function as follows:
% [% [DEX,DEY,DHX,DHY] = yeeder(NGRID,k0*RES,BC,kinc/k0);
% Input Arguments
% ===============
% NGRID [Nx Ny] grid size
% RES [dx dy] grid resolution of the 1X grid
% BC [xbc ybc] boundary conditions
% -2: periodic (requires kinc)
% 0: Dirichlet
% kinc [kx ky] incident wave vector
% This argument is only needed for periodic boundaries.

% I have verified that my function is working correctly by using test_yeeder.p.
```