

```

% DRAW1D      Draw 1D Superposition of ER, E, and H
%
% draw1d(ER,E,H,dz)
% draw1d(ER,E,dz)
%
% This function draws the dielectric materials and the fields on the same
% plot.  ER is an array containing the dielectric constant at each point
% on the grid.  E is the electric field at each point on the grid.  H is
% the magnetic field at each point on the grid.  dz is the grid resolution.

% DRAW2D      Draw Field Superimposed on Materials for 2D FDTD
%
% h = draw2d(xa,ya,ER,E,NPML)
% h = draw2d(xa,ya,ER,E,NPML,OPTS)
%
% This MATLAB function superimposes the field on top of the materials
% and plots the image to the current axes.  Fruther, it highlights the
% PML regions.
%
% INPUT ARGUMENTS
% =====
% xa, ya      Axis vectors listing the position of each cell in the grid
% ER          Permittivity function across the 2D grid
% E           The electric field across the 2D grid
% NPML       [xlo xhi ylo yhi] size of the PML
%
% OPTS       Options (Optional)
% .emax      maximum value of the electric field
% .cmap      custom colormap
%           USA, Mexico, or any MATLAB colormap
%           could also be a Nx3 array for custom colormap
% .NCOL      number of shades of color (default 64)
%
% OUTPUT ARGUMENTS
% =====
% h          Handle to the plot

% POLYFILL    Fill 2D Grid with a Polygon
%
% A = polyfill(xa,ya,P);
%
% xa,ya      Grid Axes for the Array A
% P          List of vertices for the polygon
%           [ x1 x2 ... xN ;
%           y1 y2 ... yN ];  N vertices
% A          2D array with polygon filled
%
% Note: The list of points P should progress CCW around the polygon.
%       If the points are listed in reverse order, the outside of
%       the polygon will be filled.

```