Exercise scripts and functions

1. Create a script that converts Cartesian coordinates to polar coordinates  
   Hint: See help for inverse tan function.
2. Use the script to create the function coordconv. The input arguments should be (x, y), and output argument (r, theta).
3. Expand your function to cylindrical coordinates in 3D. Your function should have the input and output arguments as “function [e1 e2 e3] = coordconv (x,y,z)”. Cylindrical are the same as polar coordinates with z = z.   
   The function should still be able to convert (x,y) to (e1,e2).

Hint: Use nargin and “if”.

1. The last step is to include spherical coordinates as well. Spherical coordinates are defined as

To be able to change in between spherical and cylindrical coordinates add an option to the input “function [e1 e2 e3] = coordconv (x,y,z,option)”

Hint: Use Switch case

Modify the function so it works even if no fourth input argument is given and choose cylindrical as default value. Hint: use nargin.