

Plot polar radiation patterns for U of 2.12(b) (both unitless and in dB w/ 0 to -20 dB scale) in the elevation planes coinciding with the y - z plane (i.e., wrt θ when $\phi = 90^\circ$ or 270°) and the azimuthal plane (i.e., wrt ϕ when $\theta = 90^\circ$). Attach copy of any work done (e.g., copy of MATLAB command window, m-file, ...)

Elevation plots

```
% EE 483/583 problem 2.12(b) (p2_12b_elevation.m)
% Plot elevation pattern (wrt theta) for
% U = sin(theta)*sin^2(phi); 0 < phi & theta < pi
clear;clc;close all;
phi = pi/2; % fixed phi angle (also works for 1.5pi)
theta = 0 : pi/180 : pi; % elevation angles for elevation pattern
U = sin(theta).*sin(phi).*sin(phi);
% ***** Plot U in dB format *****
radpat(theta*180/pi,abs(U),'r-');
% ***** Plot U in dimensionless format *****
figure; polar(theta,abs(U),'r-'); view([90 -90]);
xlabel('\theta (deg)','fontsize',14,'fontname','times'),
set(findobj('type','line'),'linewidth',1.5)
set(findobj('type','axes'),'linewidth',2)
```

Are input values in dB (Y/N)[Y]? N

Input values proportional to power (Y/N) [Y]? Y

Normalize to the Maximum Gain Value (Y/N)[Y]? Y

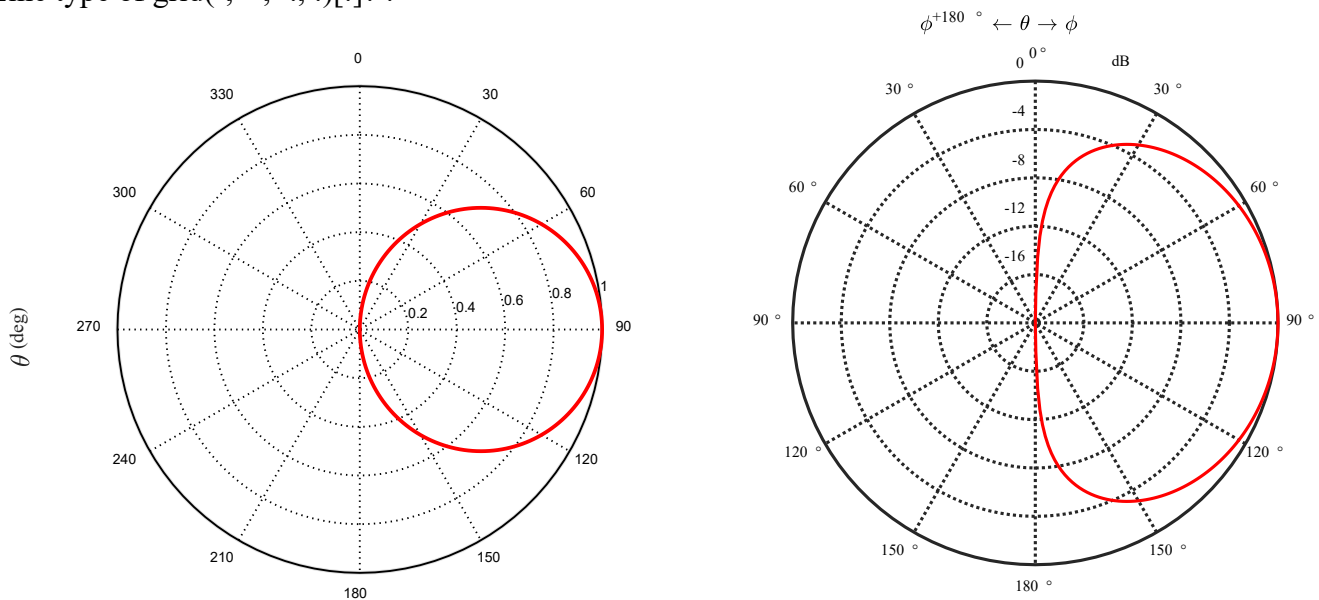
Minimum dB value at plot center [-40]? -20

Are the angles theta values? (Y/N)[Y]? Y

Labels on Vertical or Horizontal axis (V/H)[V]? V

Pattern line width [1.25]: 2

Line type of grid(-, --, -., :)[:]: ?



Azimuthal plots

```

% EE 483/583 problem 2.12(b) (p2_07b_azimuthal.m)
% Plot azimuthal pattern (wrt phi) for
%  $U = \sin(\theta) \cdot \sin^2(\phi)$ ;  $0 < \phi$  &  $\theta < \pi$ 
%
clear;clc;close all;
theta = pi/2;           % fixed theta angle
phi = 0 : pi/180 : pi; % vary azimuthal angle
U = sin(theta).*sin(phi).*sin(phi);
% ***** Plot U in dB format *****
radpat(phi*180/pi,abs(U),'r-')
% ***** Plot U in dimensionless format *****
figure; polar(phi,abs(U),'r-');
xlabel('\phi (deg)','fontsize',14,'fontname','times roman'),
%
set(findobj('type','line'),'linewidth',1.5)
set(findobj('type','axes'),'linewidth',2)

```

Are input values in dB (Y/N)[Y]? N

Input values proportional to power (Y/N) [Y]? Y

Normalize to the Maximum Gain Value (Y/N)[Y]? Y

Minimum dB value at plot center [-40]? -20

Are the angles theta values? (Y/N)[Y]? N

0 deg at North/Top or East/Right (N/E)[N]? E

Labels on Vertical or Horizontal axis (V/H)[V]? V

Pattern line width [1.25]: 2

Line type of grid(-, --, -., :)[:]: :

