

Plot polar radiation patterns for the U of 2.5b (both unitless and in dB w/ 0 to -20 dB scale) in the elevation plane coinciding with the x - z plane (i.e., wrt θ when $\phi = 0^\circ$ & 180°). Attach copy of any work done (e.g., copy of MATLAB command window, m-file, ...)

b) Elevation Pattern- Plot $U(\theta) = \cos^2(\theta)\cos^2(2\theta)$ versus θ (0 to 90°) with $\phi = 0^\circ$ & 180°

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% EE 483 problem 2.5(b) (p2_05b_elevation.m)
% Plot elevation pattern (wrt theta) for
% U = cos^2(theta)*cos^2(2*theta)    0 <= theta <= 90 deg
clear;clc;close all;
theta = -pi/2 : pi/180 : pi/2; % vary elevation angle for symmetric plot
U = cos(theta).*cos(theta).*cos(2*theta).*cos(2*theta);
radpat(theta*180/pi,abs(U),'r-') % dB plot
figure; polar(theta,abs(U),'r-'); view([90 -90]); % dimensionless plot
xlabel('\theta (deg)','fontsize',14,'fontname','times roman'),
```

Command Window inputs for radpat()

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(-, --, -, :)[:]: :

