

EE 483/583 Antennas for Wireless Communications (Spring 2025)

Homework 1

Friday, January 24, 2025

- 1) 2.5d Hint: pay attention to angular ranges.
- 2) 2.7 for $U = B_0 \cos^5 \theta$ with same range of angles. Do not work problem for U given by (a) or (b).
- 3) 2.12 for U given in (b).
- 4) 2.14 for U given in 2.12(b).
- 5) 2.28 For part (a), first find the radiation intensity and normalized radiation intensity. For part (b), first find the HPBW wrt θ . [Note: Text has typo. Replace ' e^{jkr} ' with ' e^{-jkr} ' in equation for E_ϕ .]
- 6) **EE 483 only**- 2.10 Find the directivity (unitless) as a function of angle as well as the maximum directivity (dBi).
- 7) **EE 583 only**- 2.8 First, find the radiation intensity and normalized radiation intensity. [Text has typo: Second angular range is $0^\circ \leq \phi \leq 360^\circ$.]

Due Friday, January 31, 2025.

Hint: Consider what the '`view([90 -90])`' MATLAB command does to a polar plot.