Question 5

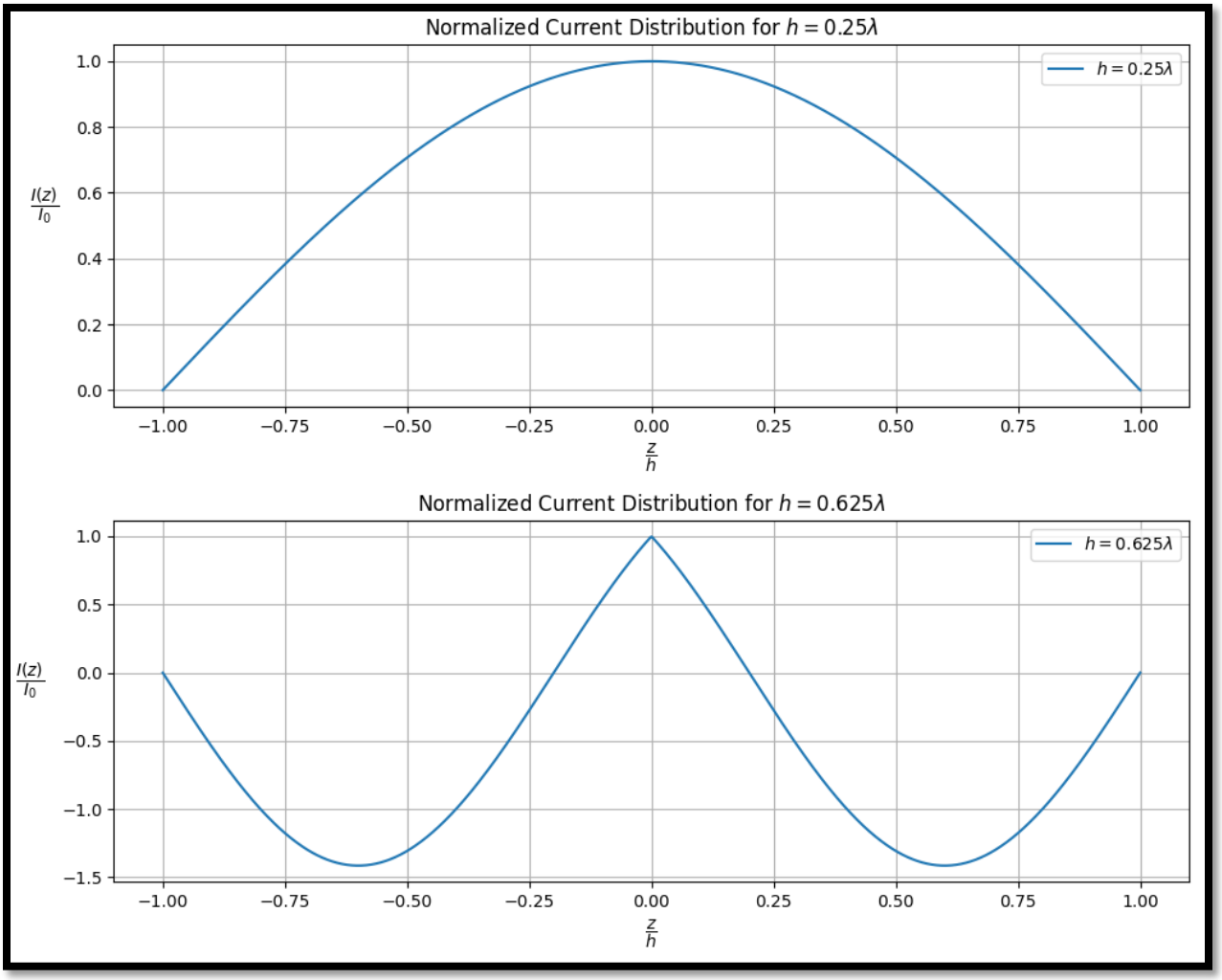

Figure 1

I'm skeptical of the current distribution for the 1.25λ case since I would expect it to be somewhere in between the λ and 1.5 λ cases (see figure 1). Maybe I've just inverted the plot somewhere?

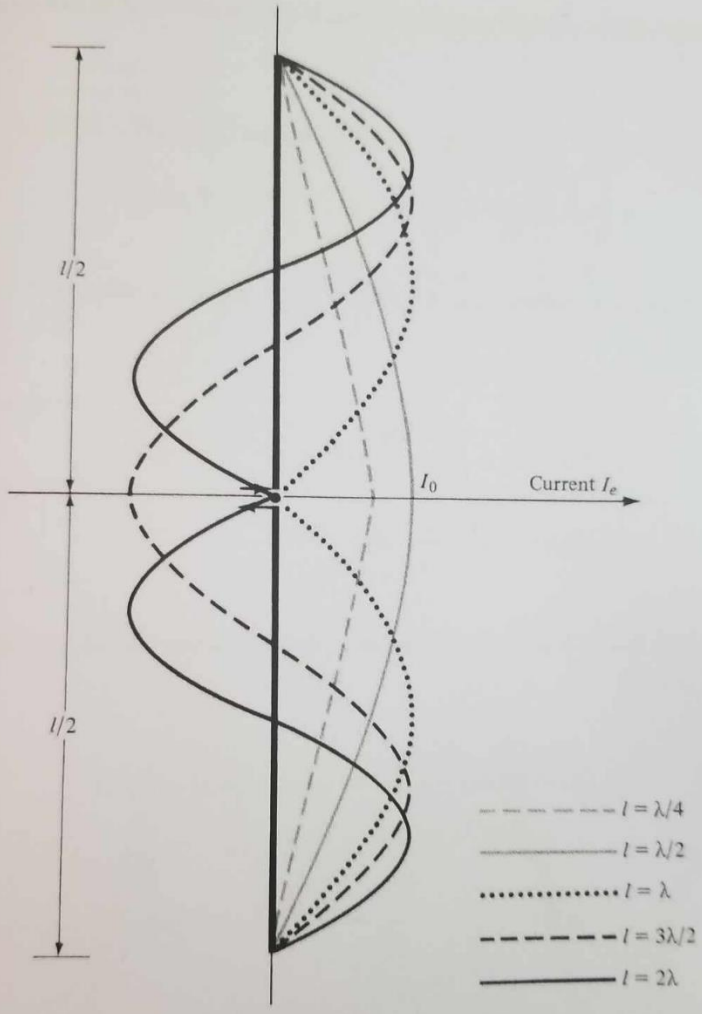

Figure 4.8 Current distributions along the length of a linear wire antenna.

To find the total power radiated, the average Poynting vector of (4-63) is integrated over a sphe
adius r. Thus

Figure 2

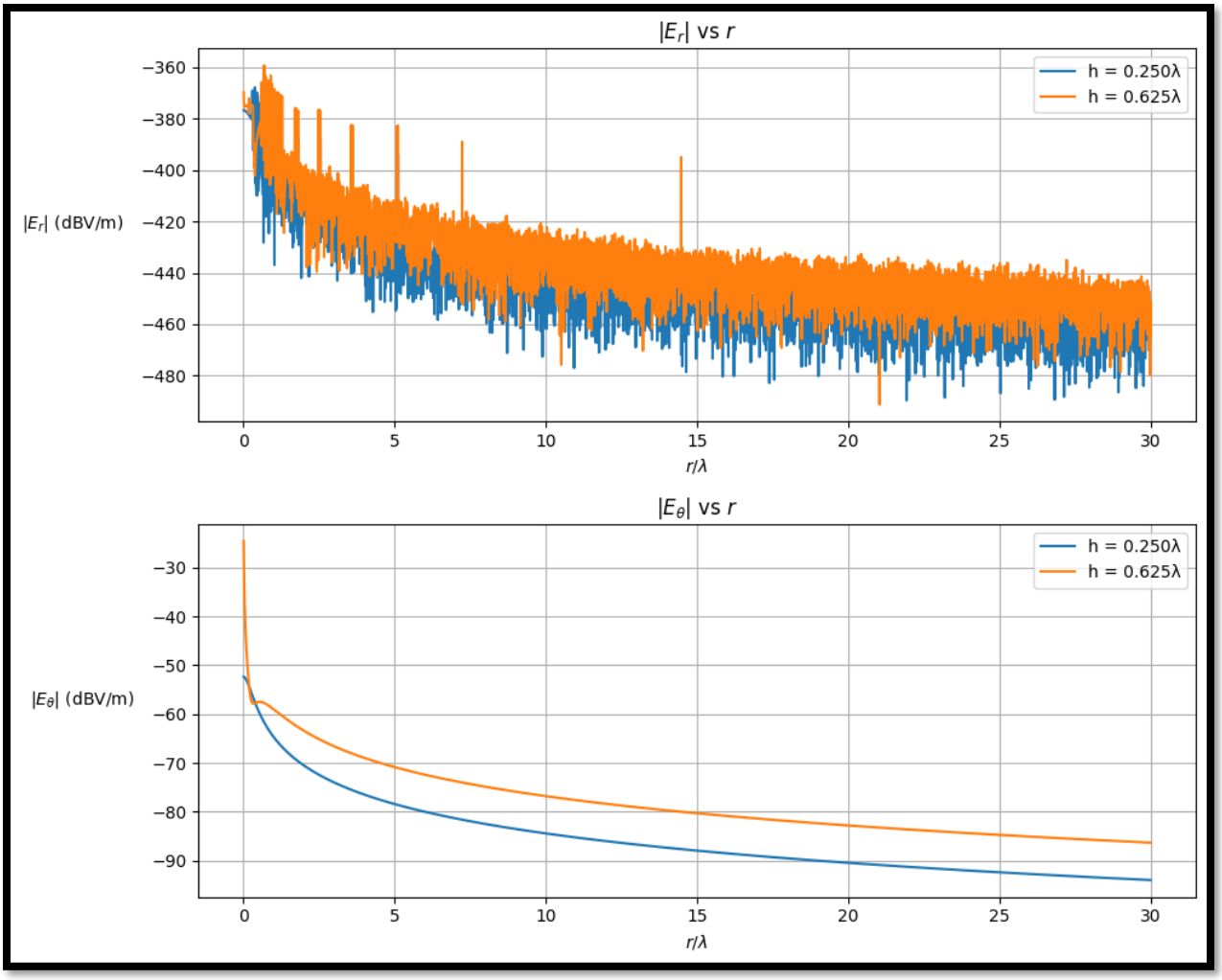

Figure 3

This does make sense. Radial component of E field should be 0 far from the antenna. Not sure what that spiking on the top plot of figure 3 is though

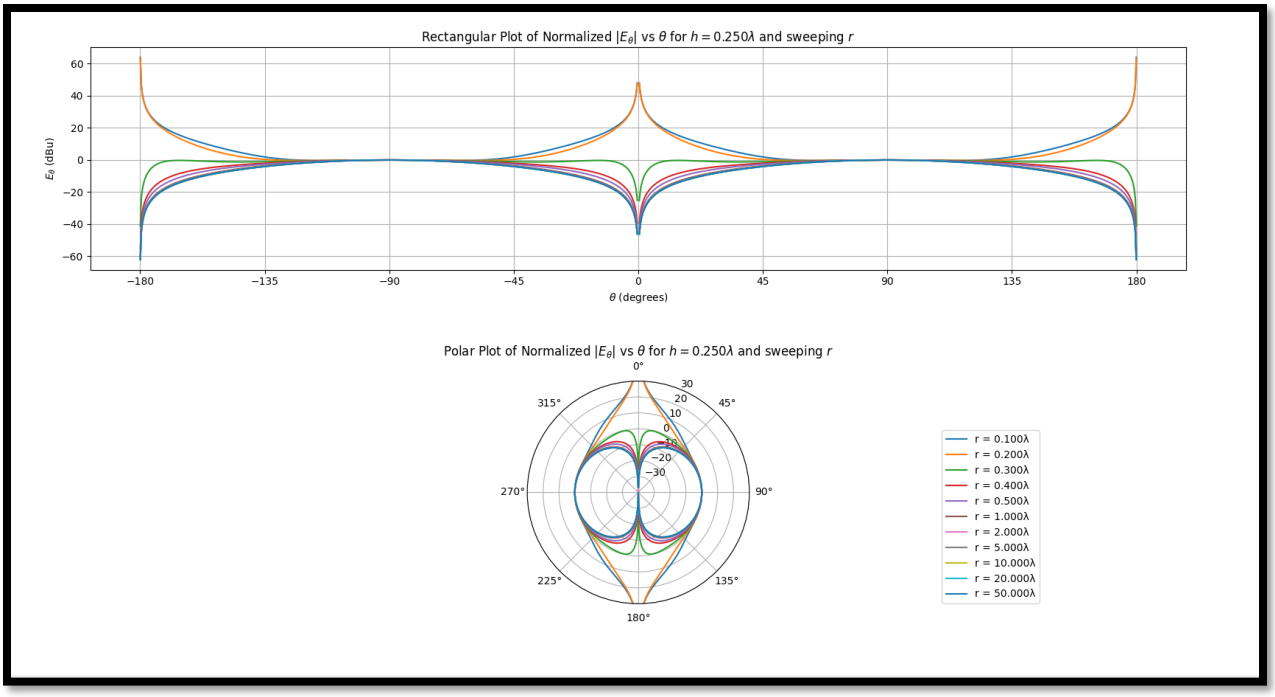

Figure 4

This makes sense. Radiation pattern should be a torus, but only close to the antenna. When looking at figure 6, the most E field is in the theta hat direction along the z azis

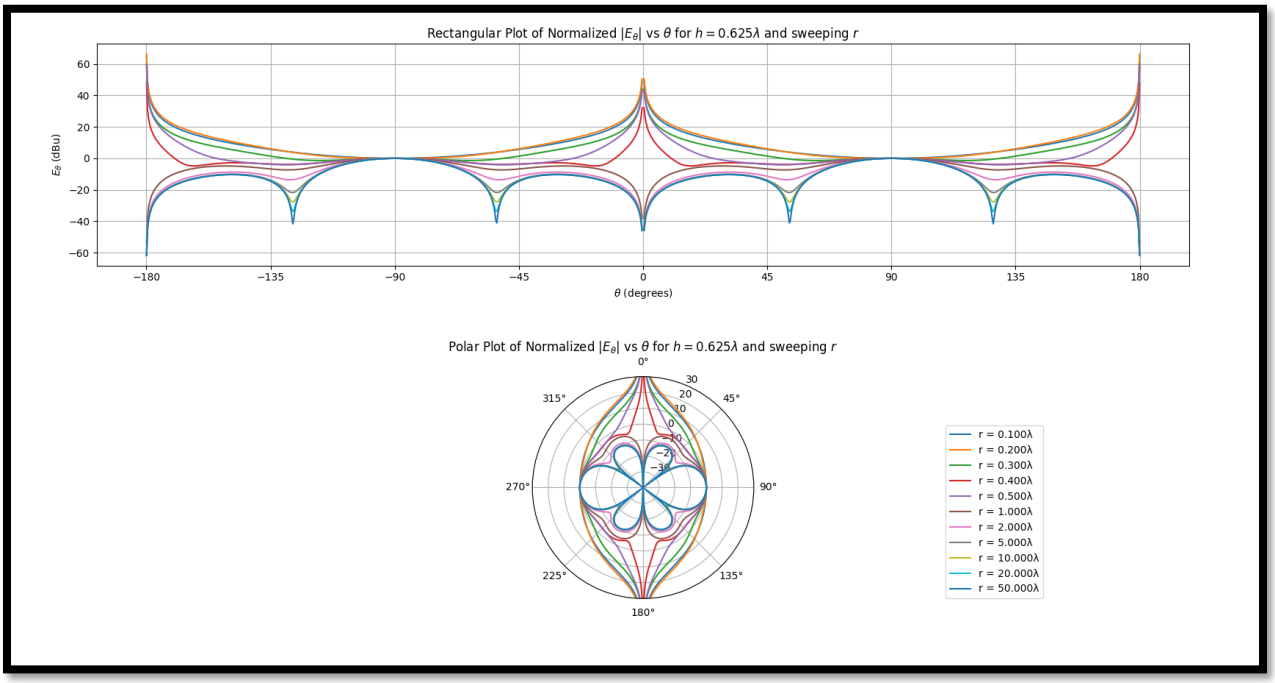

Figure 5

Makes sense again. Looks like textbook (figure 7)

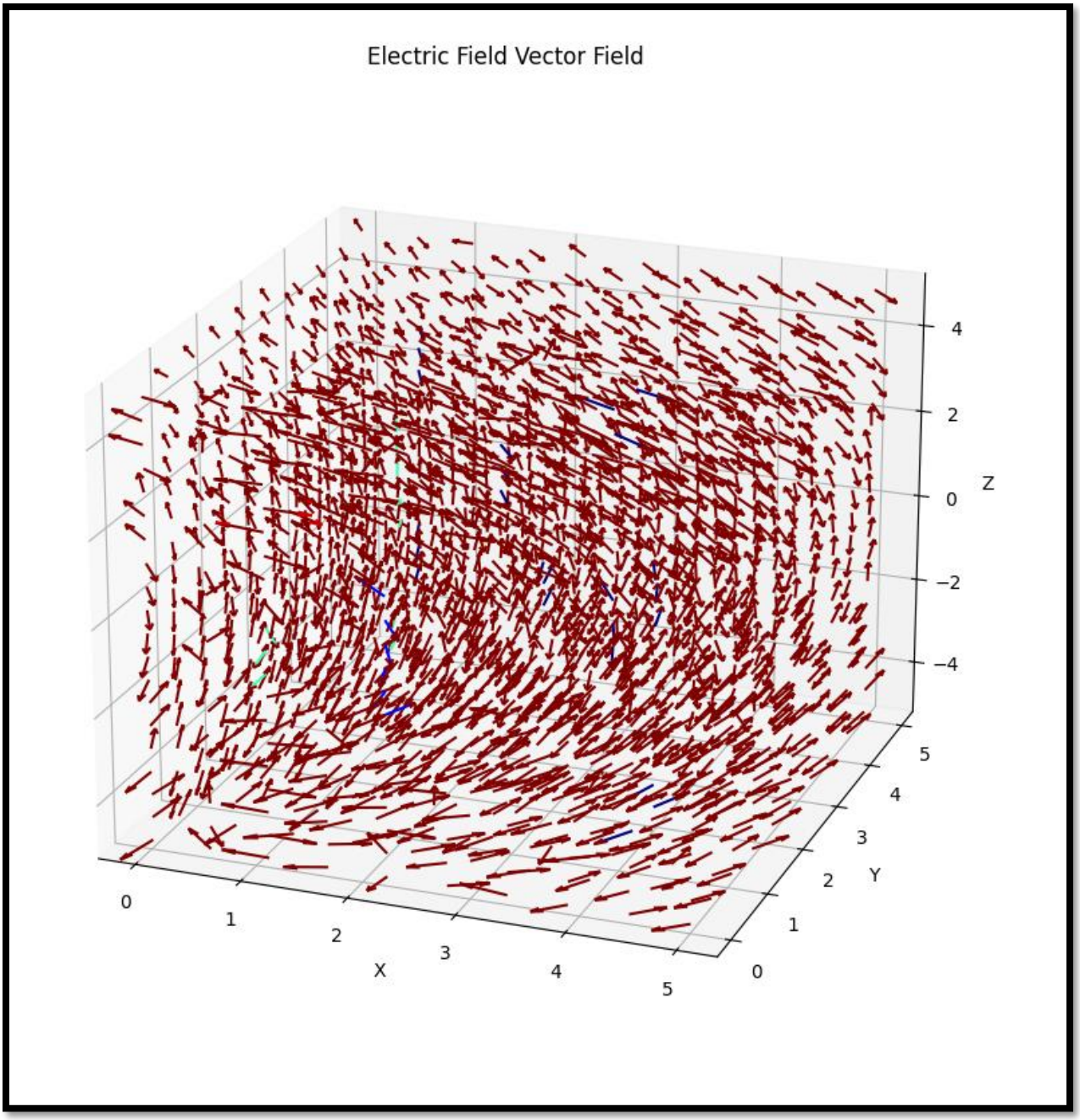

Figure 6

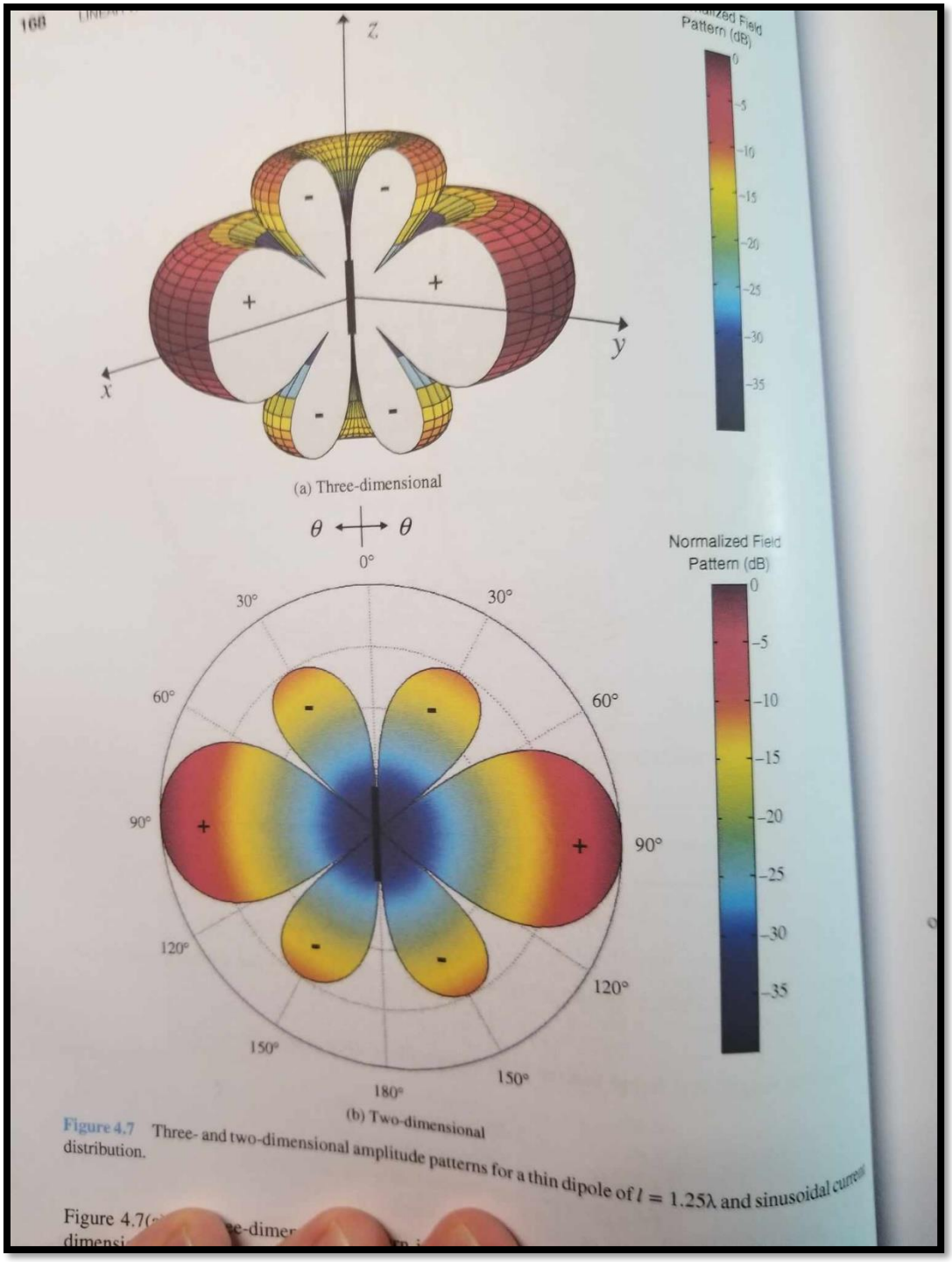

Figure 4.7 Three- and two-dimensional amplitude patterns for a thin dipole of $l = 1.25\lambda$ and sinusoidal current distribution.

Figure 7