Special Problem III.C-4

A transmitter delivers **800π Watts** to an antenna.

This antenna radiates **all** of this transmitter power **uniformly** throughout a **solid angle** $\Omega = 0.004\,\pi$ steraidians.

This solid angle Ω **subtends** an ellipse, located at a distance of x **meters** from the antenna.

The power density of the wave flowing through this ellipse has a magnitude of 50.0 mW/m^2

a) Determine the **intensity** of the propagating wave within the solid angle Ω.

b) Determine the area of the ellipse.

c) Determine the **distance** x in meters.

d) Determine the **directivity** of the antenna.

e) Determine the power density of the wave at a distance of **2x** meters.