

Special Problem 6.F-1

A transmitter delivers a **3 GHz** signal with $100/\pi$ Watts of power to a very efficient **parabolic reflector** antenna.

At **1 kilometer** away from the antenna (and in the direction of maximum radiation intensity), the antenna produces a **power density** of magnitude $22.5 \times 10^{-3} \text{ W/m}^2$.

Determine the **diameter** of this parabolic reflector.

