Problem set #11

Griffiths (3rd Ed.) problems
12.7, 12.8

Poisson's shadow
A laser beam of wavelength λ and a very large diameter is incident (normal) on a screen that contains a hole that is small enough that the intensity of the laser, I_0, over the hole is constant. If d is the diameter of the hole, then find the on axis intensity of the light as function of distance from the hole I(z). You will need to approximate the integrand of the Kirchoff integral. You may do the calculation in either the Fresnel limit or the Fraunhofer limit.

laser
plane wave