Problem A6

Figure 16.3 in Davis shows a collection of transverse mode structures for Gauss–Hermite beams. Think of methods to get a resonator to favour some of the lowest order modes, E_{00}, E_{10} and E_{11}.

Problem A7

Transformation of a plane wave in geometrical optics with a lens generates a focal point at a distance f from the lens.

Show that when a lens is placed at the waist of a Gaussian beam, $q = iz_0$, the new waist (the focal point) is not at a distance f from the lens.