

## Geometrical Optics

### Problems for Week 3

1. Light with 633-nm wavelength shines normally to a plane with two slits. We observe the first interference maximum 82 cm away from the central maximum on a screen 12 m away from the slits. What is the separation of slits? How many interference maxima one can, in principle, observe?
2. Two slits are 1 cm apart and 1 m away from the screen. Calculate the spacing between successive maxima near the central fringe on the screen for light with 500-nm wavelength.
3. Light is shining normally to  $n_1 - n_2$  interface. The intensity of reflected light is  $I = \left( \frac{n_1 - n_2}{n_1 + n_2} \right)^2 I_0$ , where  $I_0$  is the incident intensity, and  $n_i$  are the refraction indices for the two media. Find the intensities of the light transmitted (a) through air-glass interface and (b) through a slab of glass in air.