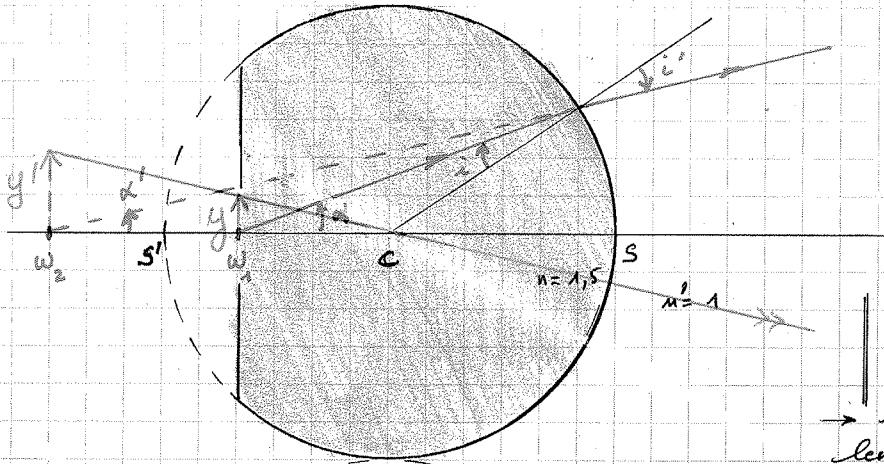


Exercise 3 - Homework 1 : Young-Weierstrass points of a spherical dioptre

a)



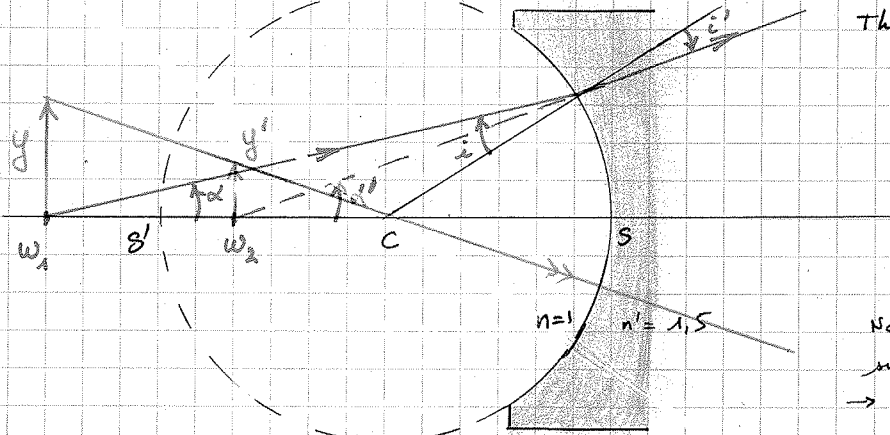
$$d' < d$$

$$\frac{y'}{y} = \left(\frac{n}{n'}\right)^2 = \frac{9}{4}$$

$y$  real,  $y'$  virtual

Good for a microscope since  $d' < d$  and  $\frac{y'}{y} > 1$  and  $y$  real.  $\frac{y'}{y}$   
 → in a microscope, the first lens is a truncated sphere  
 The object is  $n$ , on flat surface

b)

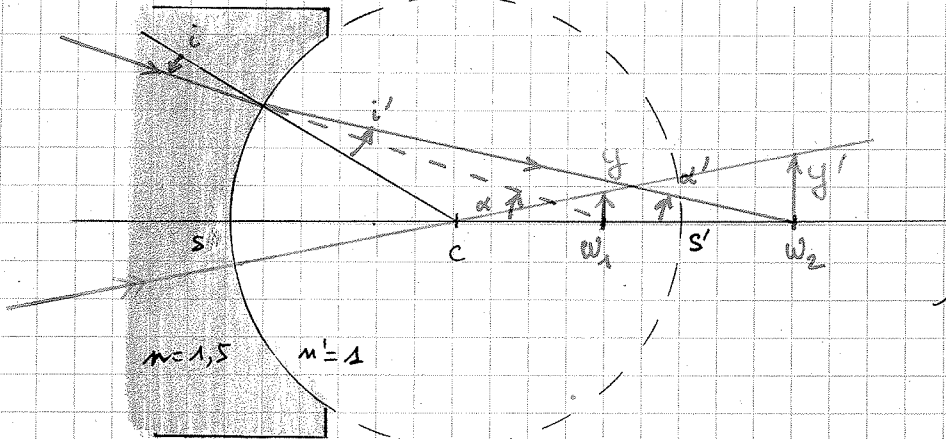


$$d' > d; y \text{ real}$$

$$\frac{y'}{y} = \left(\frac{n}{n'}\right)^2 = \frac{4}{9} < 1$$

Not good for a microscope since  $d' > d$   
 → increases angle of rays with the axis!

c)

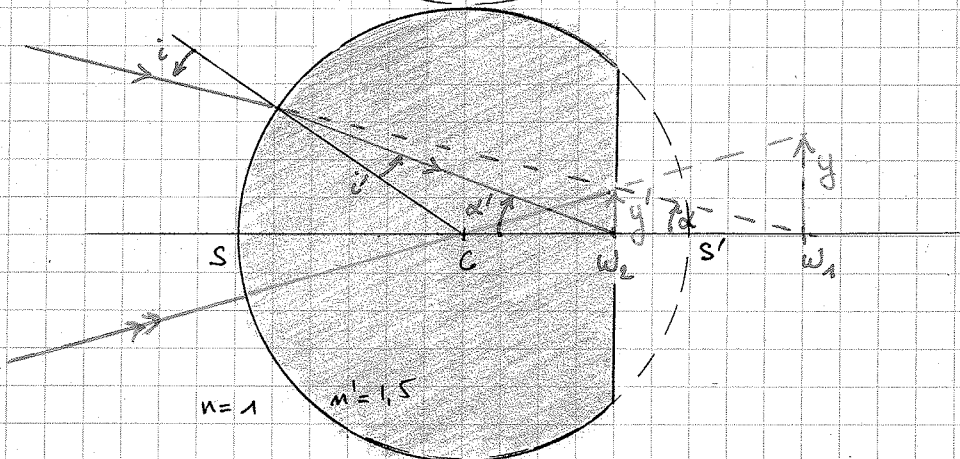


$$d' < d$$

$$\frac{y'}{y} = \left(\frac{n}{n'}\right)^2 = \frac{9}{4}$$

Not good for a microscope since  $y$  is virtual!

d)



$$d' > d$$

$$\frac{y'}{y} = \left(\frac{n}{n'}\right)^2 = \frac{4}{9}$$

Not good for a microscope since  $y$  is virtual

Scale 1:1