THE HUMAN EYE

Prof. Stephen Sekula

4/28/2011

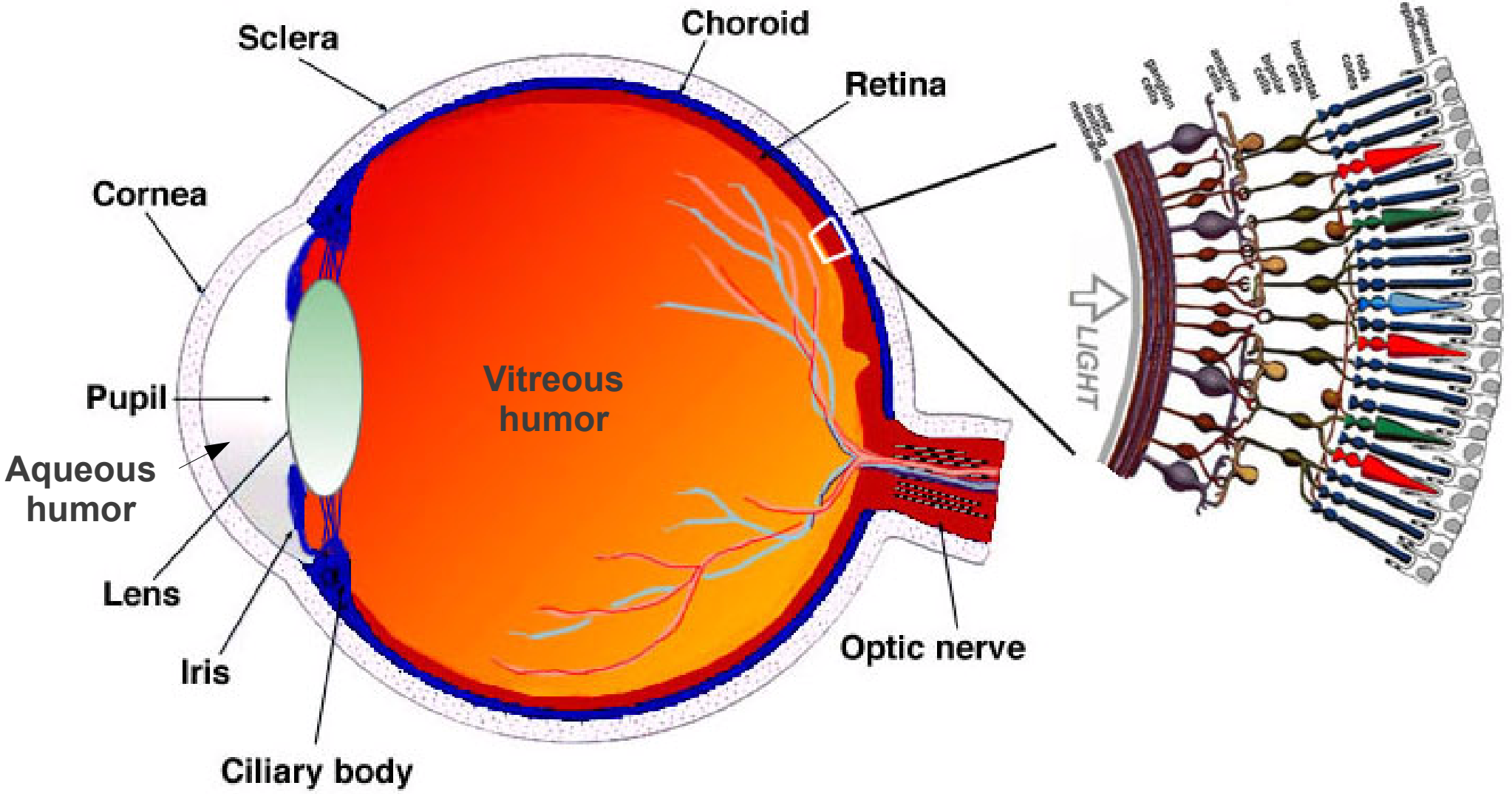
Supplementary Material for PHY1308 (General Physics - Electricity and Magnetism)

ANNOUNCEMENTS

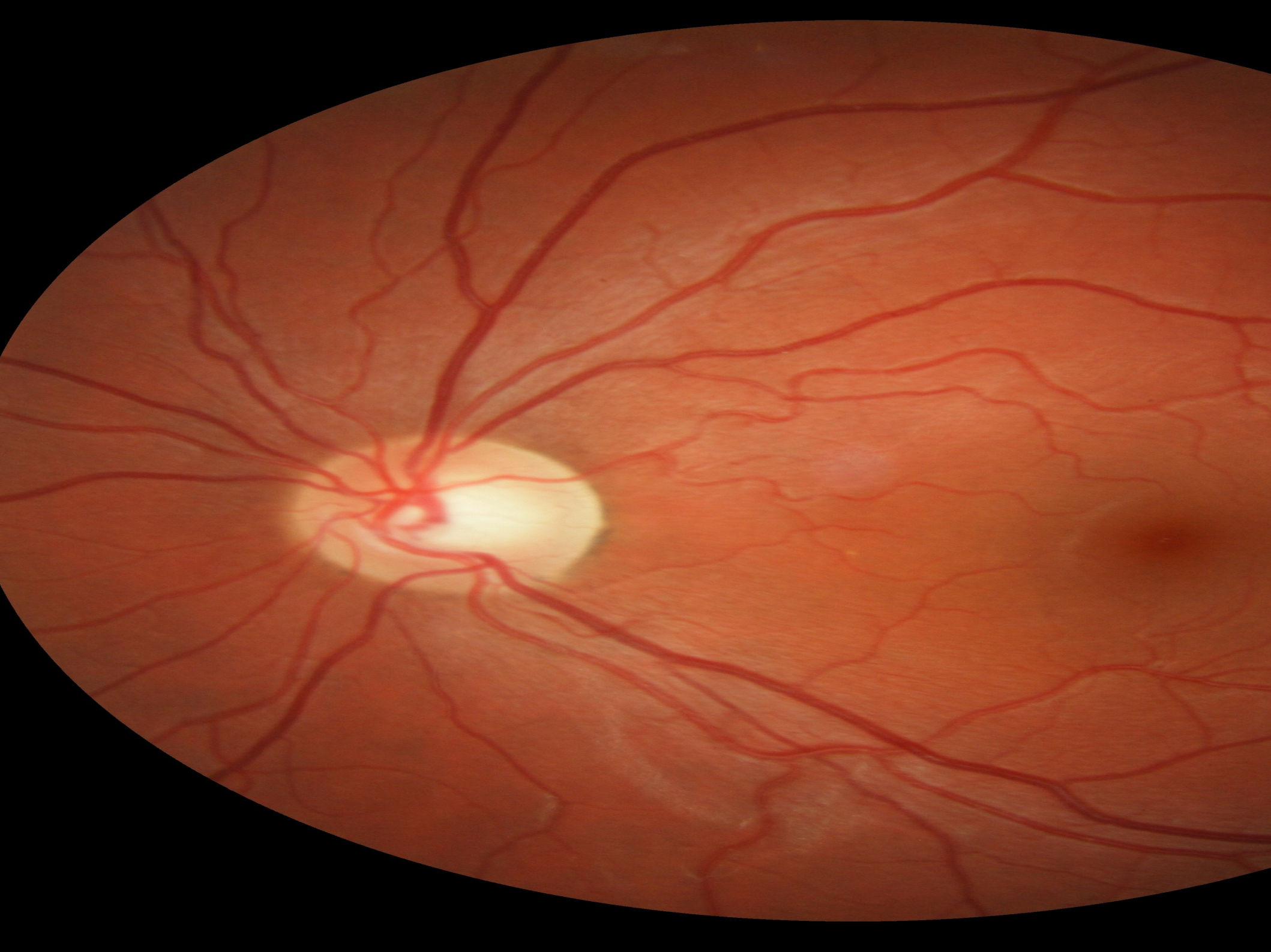
- Homework 12:
  - Due Monday, May 2 by 5pm
  - Contains two "quiz problems" - do both, only one will be (randomly) graded. That's your quiz 9 grade.
  - TAs + Prof. not allowed to offer help on these problems

FINAL EXAM (MAY 5)

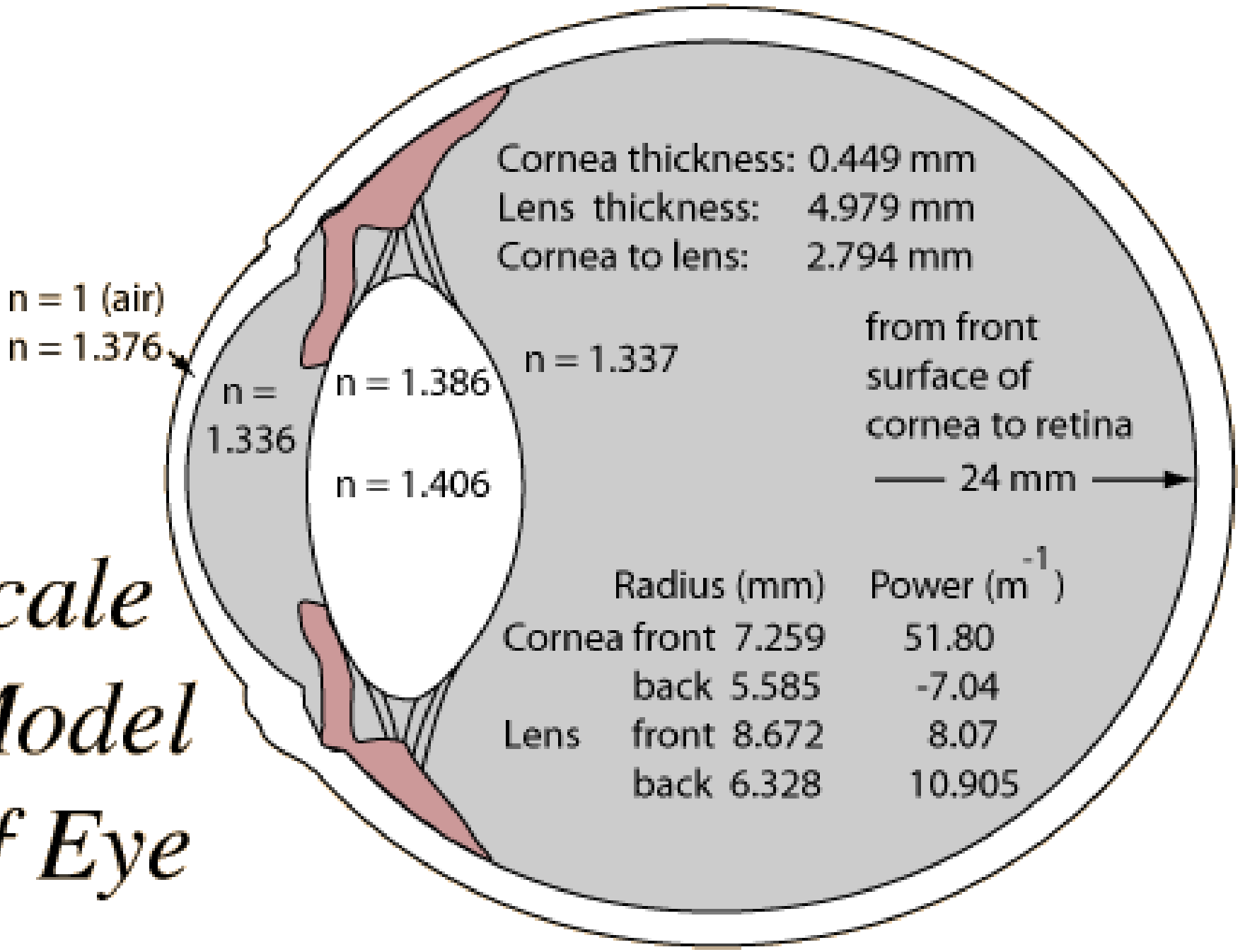
- Multiple choice, true/false, and problems
  - expect about 4-5 problems and about 20 multiple choice and true false
  - You get __2__ sheets for your formula sheet
- The Deal
  - Everybody messes up an exam now and then
  - 3 of the problems will be directed only at material from exams 1, 2, and 3
  - Do better on the problem that corresponds to your lowest in-class exam grade, and your lowest in-class exam grade will be replaced by the grade on the relevant problem


Sclera
Choroid
Retina
Cornea
Pupil
Vitreous humor
Aqueous humor
Lens
Iris
Ciliary body
Optic nerve
LIGHT

Photograph of the back of my left eye



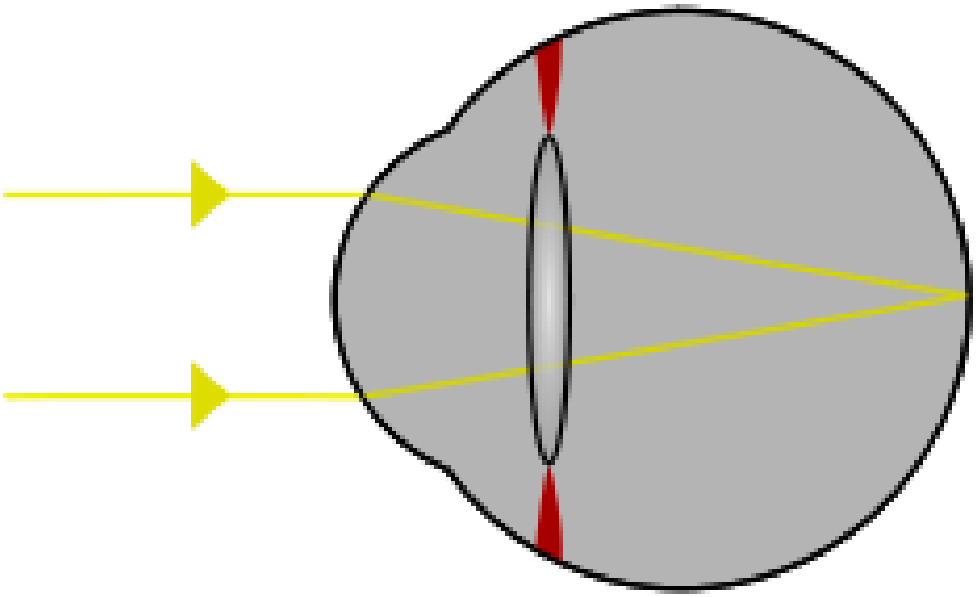
Scale Model of Eye

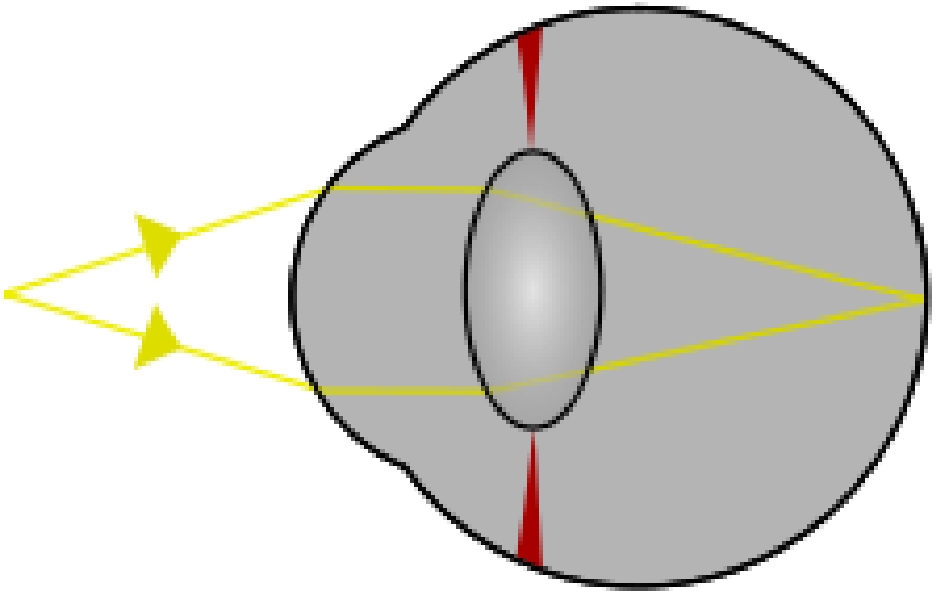


From the lensmaker equation, for a thick lens where $R_1>0$ and $R_2<0$ (double-convex)

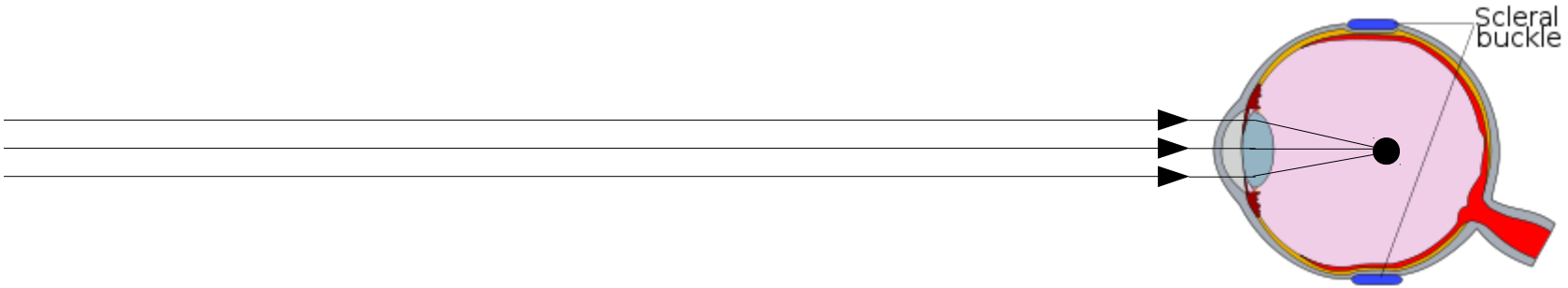
$$\frac{1}{f}=(n-1)\frac{2}{R}$$

→ Large radius of curvature = large focal length = less "power" to focus

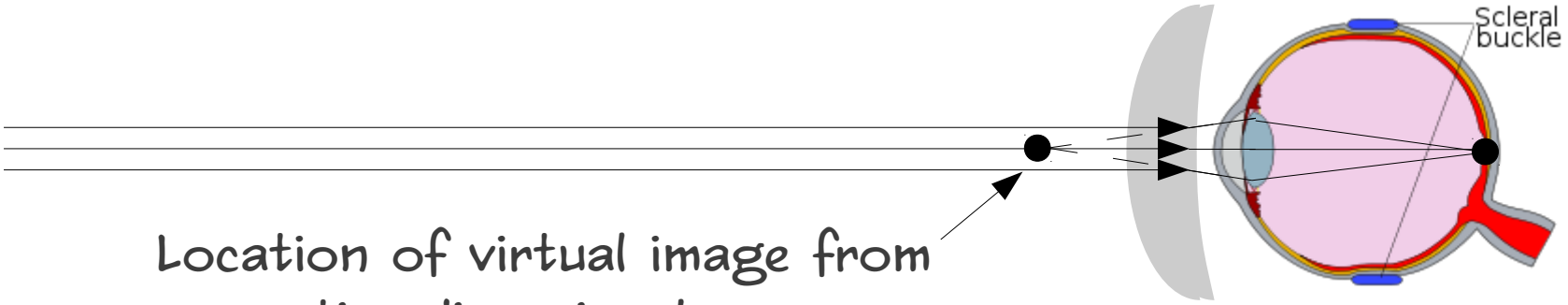




Near-sighted: cannot see distant objects



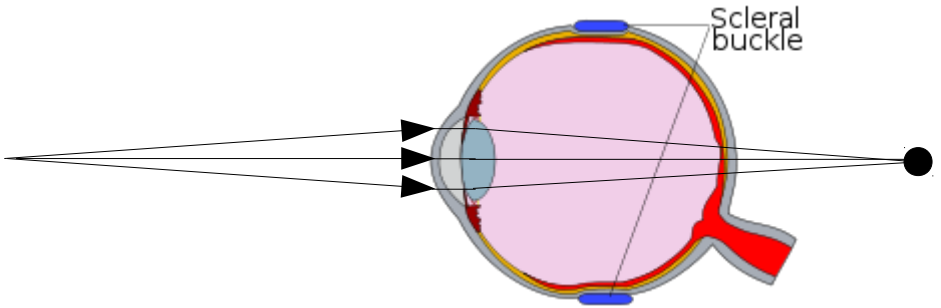
Near-sighted: corrective optics



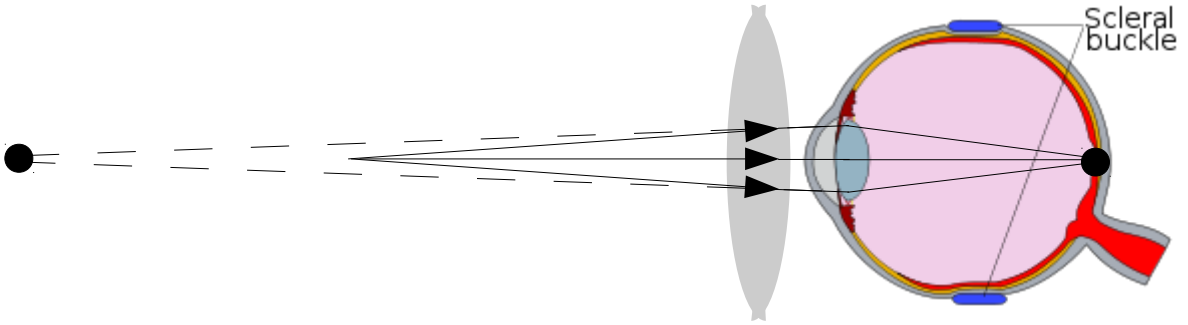
Location of virtual image from corrective diverging lens ($s'<0$), which the eye can then see

Near-sighted individuals need corrective optics that make objects look closer than they actually are so that the eye can focus on them.

Far-sighted: cannot see close objects

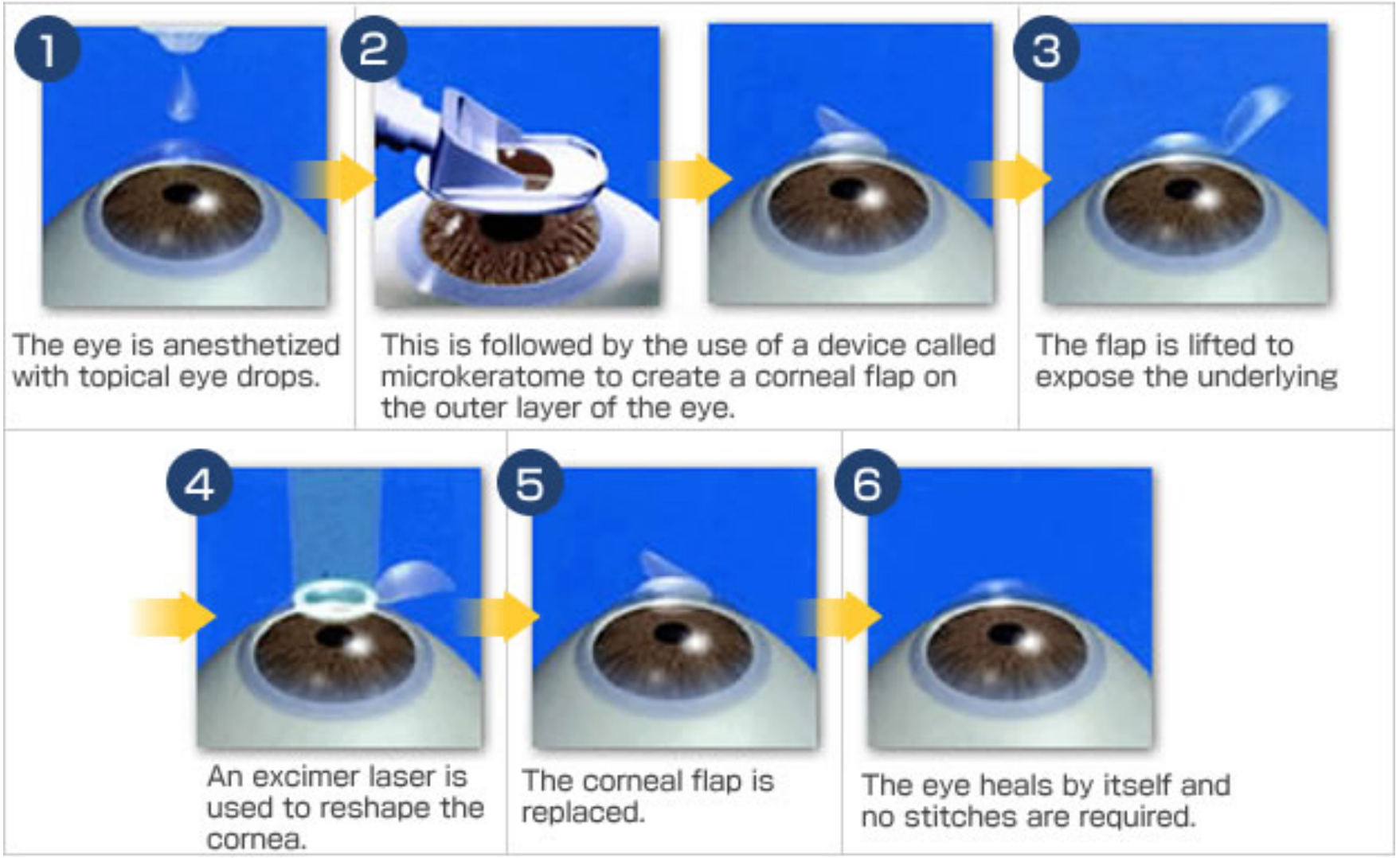


Far-sighted: corrective optics



Location of virtual image from corrective converging lens ($s' < 0$), which the eye can then see. Virtual image is further away than object.

Far-sighted individuals need corrective optics that make objects look further away than they actually are so that the eye can focus on them.

LASIK

(laser-assisted in situ keratomileusis)