Problem 1 (12 points) True or false:

a) (2 points) As an object moves closer, the ciliary muscles of the eye must contract to keep the object in focus.

b) (2 points) Far-sightedness results if the eye is too elongated from front to back.

c) (2 points) Rods are responsible for color vision.

d) (2 points) The “blind spot” contains cones but no rods.

e) (2 points) Monochromatic yellow light has higher energy than monochromatic green light.

f) (2 points) For every monochromatic color $A$, there exists a complementary monochromatic color $\overline{A}$, such that some mixture of $A$ and $\overline{A}$ makes white.

Problem 2 (4 points) Why might there be fewer types of color receptors at the center of the fovea?
Problem 3 (6 points) Label the six outer vertices of the RGB cube and of the HSV hexcone, with each one viewed along the line from black to white:

Problem 4 (10 points) Suppose we have a monitor whose red, green, and blue phosphors have colors \((x_r, y_r, z_r)\), \((x_g, y_g, z_g)\), and \((x_b, y_b, z_b)\), respectively, in the XYZ color system. How brightly must each of these phosphors be illuminated to display the XYZ color \((x, y, z)\)?