

CS4160 – Fall 2004 – Written Assignment 2
Ravi Ramamoorthi – Columbia University
Due Tuesday Dec 14, 2004 outside CEPSR 6LE4 by 5:00pm

1. Ray Tracing (10 Points)

- a. Explain how to intersect a ray with a sphere in ray tracing. An equation with explanations of the terms should suffice.

- b. Now, explain a way to use your optimized ray-sphere intersection code to intersect a ray with an ellipsoid. The ellipsoid is obtained by performing some transformation to a sphere.

2. Global Illumination (10 Points)

a. Describe (in 1-2 sentences) the rendering equation?

b. Derive one version of it.

c. What approximation(s) does ray tracing make to the rendering equation?

