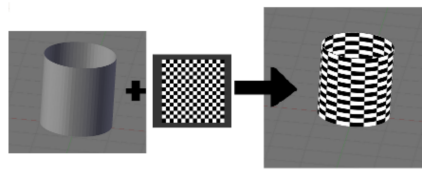**Name:**

Student ID:

CS130 Homework 6

Texture Mapping

1. Write a function that procedurally generate the uv coordinates for a cylinder. That function should take the x, y, z coordinates of a point on a cylinder centered about the origin, with height H and radius r, and returns the appropriate u, v coordinates. (The end result should match the diagram above. You can ignore the top and bottom of the cylinder).

2. What is texture mapping? What is shadow mapping? What is environment mapping? What is bump mapping?

3. Mipmapping uses a series of decreasing resolution textures to reduce artifacts from
   (a) minification
   (b) magnification
   (c) perspective distortion
   (d) all of the above
   (e) none of the above

Ray Tracing

4. (Shirley and Marschner) What are the ray parameters of the intersection points between ray (1, 1, 1)+ t(1,1,1) and the sphere centered at the origin with radius 1? Note: this is a good debugging case.

5. Label the (blue) rays in the image as view, shadow, reflected, or transmitted rays.