Computer Graphics Comprehensive Exam Fall 2003

Sign the exam with your student number - not your name_____

1. Consider a right-handed coordinate system, and a line from the origin to the point **P**(x, y, z). Find the transformation matrices needed to rotate this line into the positive z-axis

2. What is the effect of applying the one-point perspective projection matrix to points whose z-coordinate is less than zero?

3. Describe the Sutherland-Hodgman algorithm for polygon clipping.

4. Explain how flat shading, gouraud shading, and phong shading work. Provide the equations for each model.

5. Describe the following two algorithms for visible-surface determination: z-buffer and depth-sort.

6. Express, in terms of R, G, and B:

   (a) the I of YIQ;

   (b) the V of HSV;

   (c) the L of HSL;

   Note that I, V, and L are not the same.