CMSC 435 / 634 Introduction to Computer Graphics

Homework Assignment 4 (Due May 2nd before class by email to TA)

- The work must be all your own.
- Be explicit, define your symbols, and explain your steps. (This will make it a lot easier for us to assign partial credit.)

1. (20 points) We did an example in class to calculate the final pixel color from the Phong shading model (Lambertian diffusion shading + specular highlight + ambient component) when a ray hits a surface in a scene. This exercise will be similar to that one.

Given a set of parameters defined as the following:

Viewpoint: 5, 4.5, 4, viewDir: -5, -3.5, -4 (therefore, v = normal(5, 3.5, 4));

Triangle (defined by three vertices): A (0, 0, 10), B (10, 0, -10), C (-10, 0, 10);

The viewplane to camera distance is 1 (not really useful in this case);

Illumination from the light source: (1, 0.3, 0.2) (redish color);

The diffusion coefficient kd (R) = kd (G) = kd (B) = 0.8;

The specular coefficient ks (R) = ks (G) = ks (B) = 0.6;

The specular power of the Phong model (or the shininess constant of the material) = 5; And

the ambient lighting parameters: Ka = 1.0; Ia = (0.1, 0.1, 0.1),

calculate the color of the pixel at the center of the image plane.

To submit, please email Anudeep your answer in pdf.