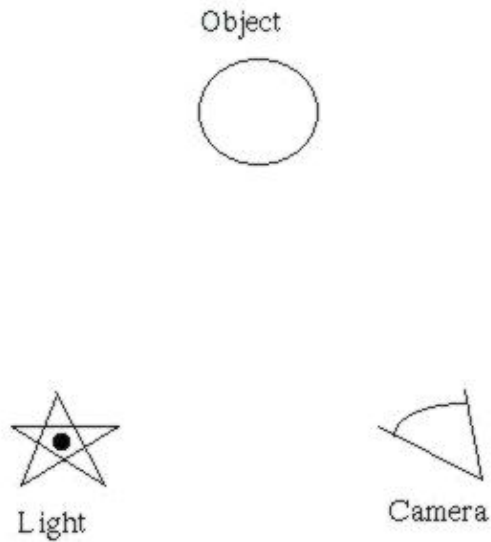


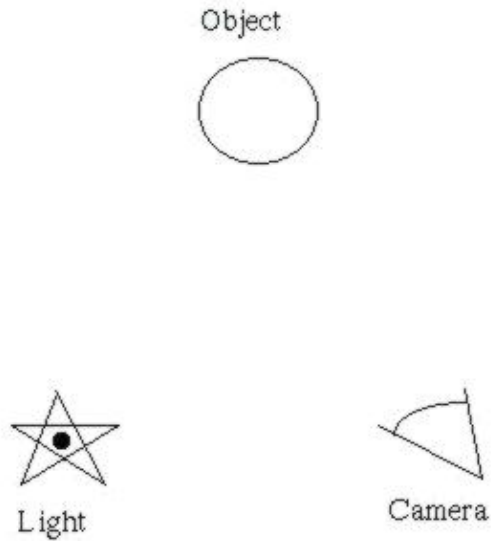
**CS 184, Spring 2001  
Final  
Professors Brian A. Barsky and James F. O'Brien**

**Problem #3**

(a) [4 points] In the scene below, label the brightest spot on the object assuming that it has a diffuse (Lambertian) surface.



(b) [4 points] Label the brightest spot on the object assuming that it has a highly specular surface.



**Problem #4**

[4 points] In 25 words or less, what is the difference between local and global illumination?

**Problem #7**

[9 points] Indicate which cubic splines have the specified properties.

	Hermite	Bézier	Catmull-Rom
(a) Convex hull property			
(b) Fully interpolatory			
(c) Specify the slope of the curve at the endpoints of each segment			

**Problem #8**

[1 point] Did you put your name on the front of this exam?

**Problem #9**

[5 points] Which of the following would allow a ray tracer to simulate diffuse reflection?

- (a) Deeper recursion
  - (b) Shooting more rays at each bounce (in random directions)
  - (c) Fuzzy logic
  - (d) Higher precision arithmetic
- Please explain your answer.

**Problem #10**

[4 points] A radiosity solution for a particular environment is computed and displayed. What parts (if any) of the solution would need to be recomputed if the viewpoint is moved?

**Problem #13**

[9 points] What is the difference between bump mapping, displacement mapping, and environment mapping?

**Problem #14**

[4 points] Why would you want to perform back-face culling if you already had a built in hardware Z-buffer?

**Problem #15**

[4 points] You are producing a film for a screen that is not flat (like an IMAX screen). What would be a good rendering technique to use?

**Problem #16**

[4 points] Name two shapes which could be the result of (planar) perspective projection applied to a line segment.

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**Posted by HKN (Electrical Engineering and Computer Science Honor Society)  
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