

Name:

UNIQNAME#:

3	2	5	10

**Directions** – The quiz is closed book/notes. You have 10 minutes to complete it; use this paper only.

**Problem 1: Recall (3pts) (Fill in the blanks.)**

The Phong shading model differs from the Lambertian model in two ways: \_\_\_\_\_ and \_\_\_\_\_.

*Solution:*

| Ambient lighting and specular lighting.

**Problem 2: Recall (2 pts) (Fill in the blank.)**

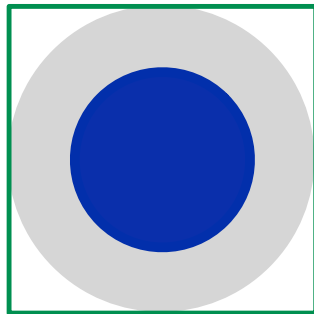
In the context of scale-space, define the characteristic scale as the scale that \_\_\_\_\_ of the Laplacian response.

*Solution:*

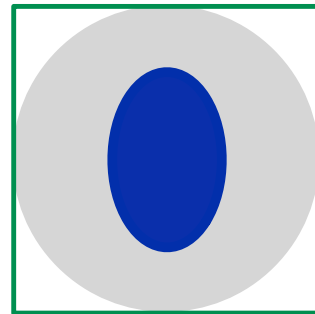
| produces the peak

**Problem 3: Comprehension (5 pts)**

Consider the two images (a) and (b) below and a dense discrete scale-space based on the DoG operator.



(a)



(b)

1. (2) Would the selected scale that maximizes the DoG with respect to the signal for images (a) and (b) be the same? \_\_\_\_\_
2. (1) The DoG / SIFT description mechanism is based on finding the dominant direction of the gradient of the direction. This leads to rotation invariance. Can these two images have the same dominant gradient direction? \_\_\_\_\_
3. (1) Is it always the same dominant direction for these two images? \_\_\_\_\_
4. (1) What is an extension of these ideas to have these two images always yield the same descriptor? \_\_\_\_\_

*Solution:*

| No, Yes, No, Compute the Affine Frame (instead of just the dominant rotation).