

Name: Rachel Collier

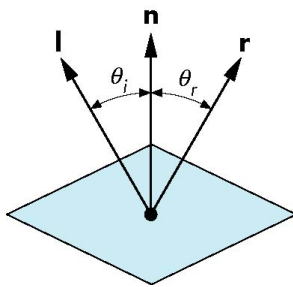
Total score: 100

Class PARTICIPATION on Lecture 6.doc ANSWER SHEET

(Out of 100 points. Please record your own total score!)

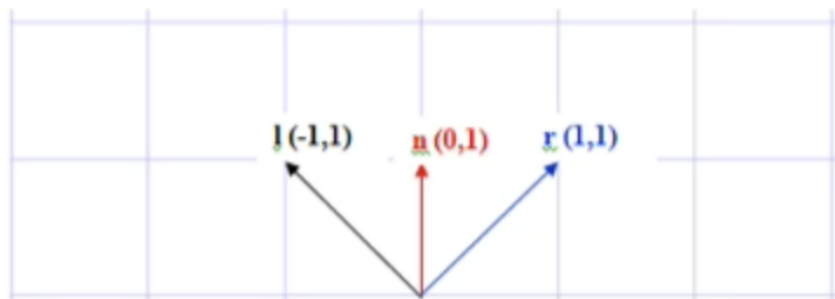
(Attach as score.doc!)

1. (20 points) Draw and Calculate the reflection vector  $\mathbf{r}$  when  $\mathbf{l} = (-1,1)$  and  $\mathbf{n} = (0,1)$



$$\mathbf{r} = 2 (\mathbf{l} \cdot \mathbf{n}) \mathbf{n} - \mathbf{l}$$

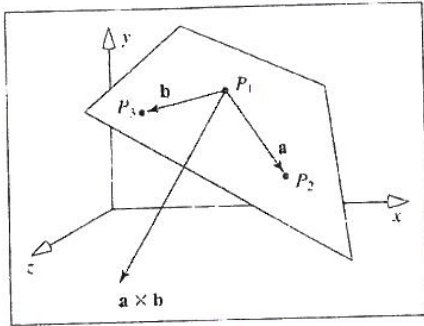
ANSWER:



$$\mathbf{r} = 2 (-1,1) \cdot (0,1) - (-1,1) = 2 \cdot 1 (0,1) - (-1,1) = (0,2) - (-1,1) = (1,1)$$

$$\mathbf{r} = (1,1)$$

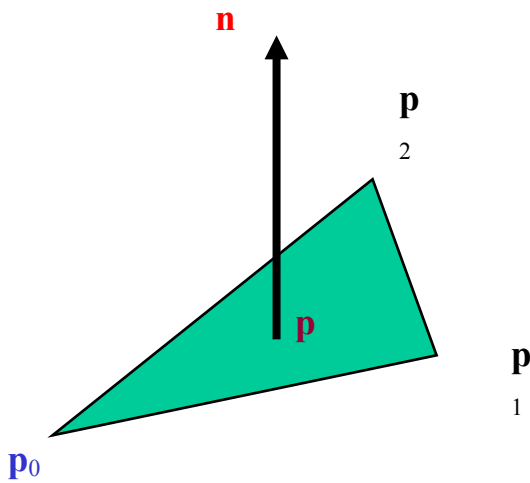
2. (20 points) Write the normal  $\mathbf{n}$  to a plane defined by 3 points  $\mathbf{P1}$ ,  $\mathbf{P2}$ ,  $\mathbf{P3}$  (same as normal  $\mathbf{n}$  to a plane defined by two vectors  $\mathbf{a}$  and  $\mathbf{b}$ )



ANSWER:

$$\mathbf{n} = (\mathbf{p2} - \mathbf{p1}) \times (\mathbf{p3} - \mathbf{p1})$$

3. (20 points) Express the normal  $\mathbf{n}$  to a triangle both as a dot product  $\bullet$  and as cross product  $\times$ .



ANSWER:

$$\mathbf{n} \bullet (\mathbf{p} - \mathbf{p0}) = 0$$

$$\mathbf{n} = (\mathbf{p2} - \mathbf{p0}) \times (\mathbf{p1} - \mathbf{p0})$$

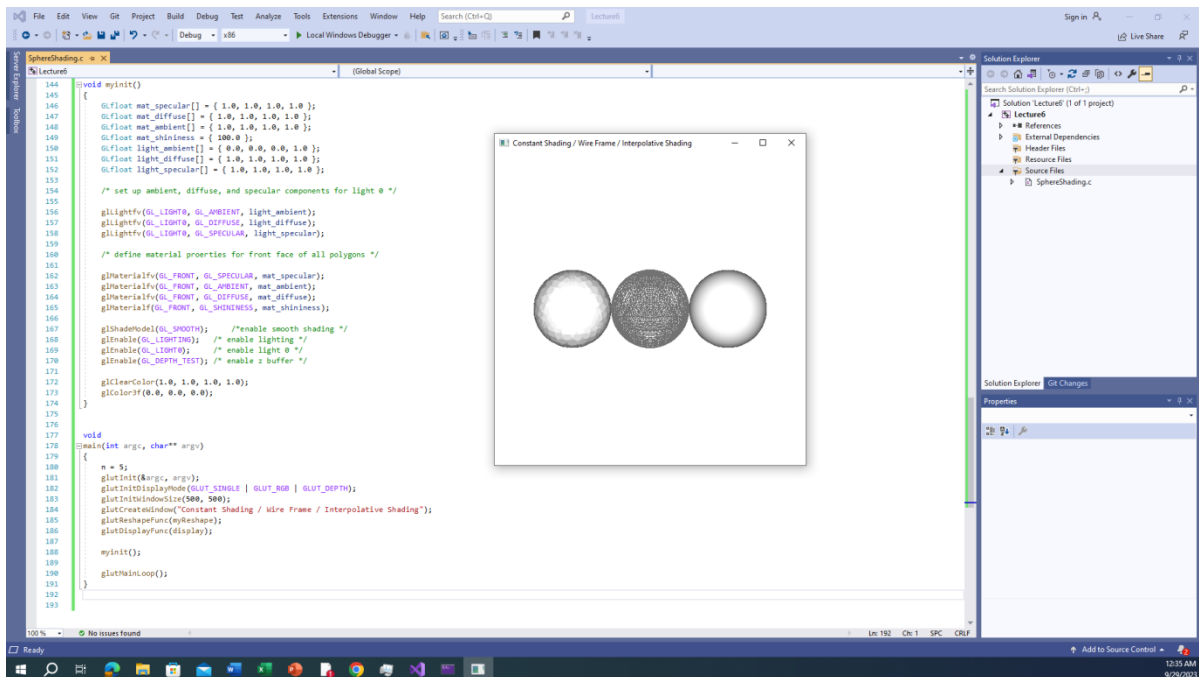
4. (20 points) Normalize  $\mathbf{n}$  to  $\hat{\mathbf{n}}$

ANSWER:

$$\hat{\mathbf{n}} \leftarrow \mathbf{n} / |\mathbf{n}|$$

5. (20 points) Create **Lecture6** Empty Project:

Download **SphereShading.c** from CANVAS.



Build and run the project.  
(Take print screen and insert here)

Please rename document to **score.doc** (example **100.doc**)  
Warning: if your score is not honest you will get a zero.

