

NAME \_\_\_\_\_

PERIOD \_\_\_\_\_

**PHYSICS HOMEWORK QUIZ #19.3D**

**SNELL'S LAW & REFRACTION**

[Speed of light in vacuum =  $c = 3.0 \times 10^8$  m/sec,  $1 \text{ m} = 10^{10} \text{ \AA} = 10^9 \text{ nm}$ ,  $n_{\text{air}} = 1.0$ ]

Light, which has a wavelength of  $\lambda = 495 \text{ nm}$  in glass which has an index of  $n_{\text{glass}} = 1.55$ , exits the glass, which is sitting in a liquid of unknown index of refraction, at an angle of  $\theta_1 = 36^\circ$  as shown to the right. After exiting the glass the direction of motion of the light wave changes to  $\theta_2 = 47^\circ$ .

1. What is the index of refraction of this liquid? [3 pts]
2. What will be the speed of the light wave in the glass? [3 pts]
3. What will be the speed of the light wave in the liquid? [3 pts]
4. What will be the frequency of this light wave in the liquid? [3 pts]
5. What will be the critical angle between these two mediums? [3 pts]

