Quiz 4
Physics 221

Name: _____

1. Light of 550 nm is shone through two narrowly spaced slits 0.044 mm apart. The slits are placed 0.96 meters from a wall. If the space between the central maximum and the first bright line is 1.2 cm, determine the path difference between the two rays of light that make the first order bright line.

2. Explain why diffraction occurs.

3. If a person measures the diffraction from a hair and finds the following, calculate the thickness of their hair. Distance from the hair to the wall 2.72 meters and the distance from the center of the beam to the first bright spot was 2.75 cm. The laser emitted a wavelength of 633 nm.

Double Slit: $y_m = \frac{m \lambda L}{d}$

Diffraction grating: $d \sin\theta = m\lambda$ $y_m = L \tan \theta$