Physics 216 HW Ch35 To hand in due beginning of class 3/14/2018.

To receive full credit:

- **clearly show your reasoning** (including any necessary calculations),
- **indicate your final answer in an unambiguous way** (such as by circling or underlining it).
- **Round your answers appropriately**

1. Ch 35 Exercises and Problems number 1
2. Ch 35 Exercises and Problems number 5
3. Optical dispersion has to do with the fact that the index of refraction is, in general, dependent on the wavelength of light. Quantify this relationship as follows:
    a. Write down Snell's law for light of one wavelength going from air to a material with index n, refracting to an angle θ_2
    b. For the same incident angle, write down Snell's law for light of another wavelength for which the index is n+δn and the angle is θ_2+δθ.
    c. Subtract the two equations and find the difference in angle between the two wavelengths. You will need that: $\sin(\theta + \delta\theta) \approx \sin(\theta) + \frac{dsin(\theta)}{d\theta}\delta\theta$ (where dsin(theta)/dtheta is the derivative of sin(theta) with respect to theta and all angles in radians)
    d. If red light has an index of refraction of 1.552 in a glass and refracts 28 degrees and violet light refracts 0.23 degrees more than red, what is the index of refraction for the violet light?