UV-vis Problem Set #2

1. (a) You have blazed reflecting grating and would like to know the distance between the grooves (d). Using a 632.8 nm laser with an incident angle of 25˚, you measure a 1st order reflected angle of –6.1˚. What is the distance between the grooves of the diffraction grating?

   (b) What is the groove density (grooves/mm)?

   (c) What is the total number of grooves (N) if the grating is 20 mm wide?

   (d) What is the resolving power (R) of the grating?

   (e) What is the minimum wavelength that can be separated by this grating?

   (f) What is the linear dispersion (D_l) when this diffraction grating is used in a monochromator with a focal length of 0.50 m? (Reminder: the units on linear dispersion are mm/nm.)