The classical two slit (Double Slit) interference patterns. Assume that you have a two slit interference experiment is being run. The incoming light ray is of 650 nm in wavelength.

a. What is the separation of the slit, the distance $d$, in the figure above, for the distance from the brightest intensity (as seen from the screen) to the next brightest intensity is 1.2 cm (central max to the next max). The screen distance is roughly about 8.8 meters from the two slits.

b. Using the same spacing that is found in a, you will now try to find for what wavelength will now give you a deconstructive interference for the same 1.2 cm distance from the center.

Question 2:

a. Suppose that you are in Astronomy program here at UT. Your lab t/a wants you to make a photographic image of two novae which are both separated by a distance of $9.8 \times 10^{14}$ meters. Let's assume that these stars are emitting gammas of 380 nm. You are told that your camera's aperture with a diameter of roughly 1.2 mm. Based on this what would you say is your distance from these stars?