Optics and waves (week 10)

a) A thin layer of film (refractive index n = 1.4) is coated on the surface of a lens. The film is designed to minimize the reflection of the blue light (λ = 450 nm) at normal incidence. If the lens is made of glass with refractive index n = 1.35, what is the minimal thickness of the film? [5]

b) Two narrow slits separated by d = 0.05 mm are illuminated by light of wavelength 589 nm. Based on the diagram shown below, find the phase difference between the two rays if θ = 0.1 degree. [2]

Find the spacing of the bright fringes formed on a screen 2 m away. [3]