1 Double Slit

Light of wavelength 700 nm is lighting two narrow slits 70 μm apart.

i. What is the angle of the m=2 bright fringe in both radians and degrees?

ii. If the screen is 70 cm away from the slits what is the fringe spacing?

iii. What happens to the fringe space if the screen is moved to 140 cm away?

iv. What will the fringe spacing be if the light is changed to 350nm?

2 Single Slit

A laser of 633 nm illuminates a single slit which is then observed on a screen 1 m away. The distance between the first and second minimum is 4.5 mm.

i. What is the width of the slit?

ii. What is the width of the central maximum on the screen?

3 Multiple Slit / Diffraction Grating

A diffraction grating of unknown density is lit with a 633 nm light. A screen is placed 1.5m behind the grating.

i. The second order maximum is located at an angle of 40 °. How many lines per milimeter does this grating have?

ii. What is the distance between the two m=1 fringes?

iii. How many bright fringes can be seen on the screen?