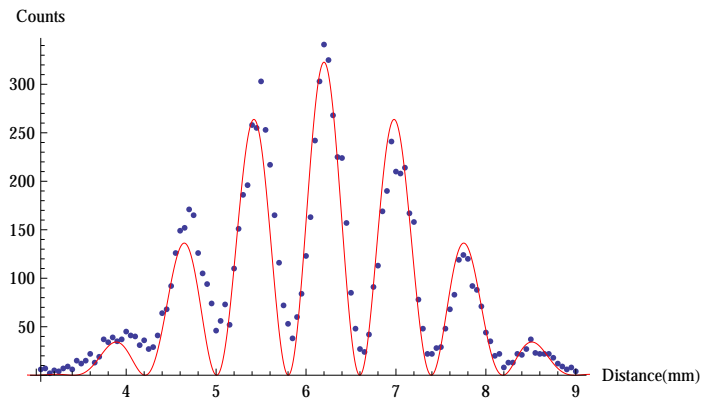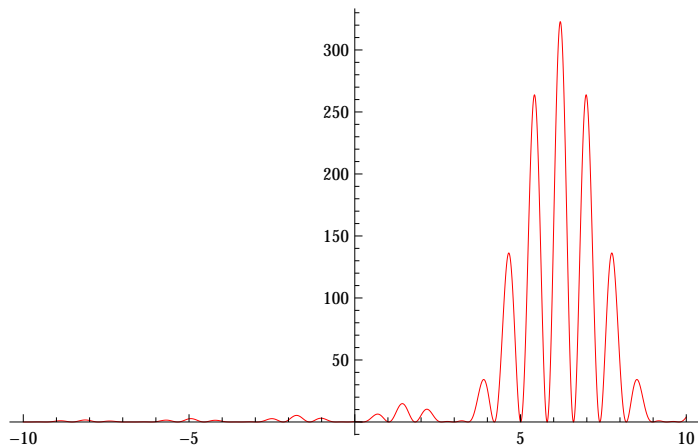```
SetDirectory["/Users/danikaluntz-martin/Desktop/Advanced Lab/DoubleSlit-ED"];
counts1 = Import["2014_double_slit_bulb_counts.csv"];
counts1;

θ = (x - x0) / R;
α = π * a * Sin[θ] / λ;
β = π * d * Sin[θ] / λ;

i₂ = i0 * (Sinc[α])² * Cos[β]²;

x0 = 6.2;
a = 0.085;
d = 0.343;
R = 500;
λ = .000546;

fit1 = NonlinearModelFit[counts1, i₂, {i0}, x];
plot1 = Plot[fit1[x], {x, -10, 10}, PlotRange → All, PlotStyle → Red]
Show[ListPlot[counts1], plot1, AxesLabel → {Distance [mm], Counts}]
```

$\theta = (x - x0) / R;$
$\alpha = \pi * a * \text{Sin}[\theta] / \lambda;$
$\beta = \pi * d * \text{Sin}[\theta] / \lambda;$

$i_2 = i0 * (\text{Sinc}[\alpha])^2 * \text{Cos}[\beta]^2;$

$$\text{ChiSq} = \sum_{j=1}^{120} \left( \frac{\text{fit1}[\text{"FitResiduals"}][[j]]}{2 \left( \sqrt{\text{counts1}[[j, 2]]} - \sqrt{1.68} \right)} \right)^2$$

```
RedChiSq = ChiSq / 7
```

510.333

72.9047