

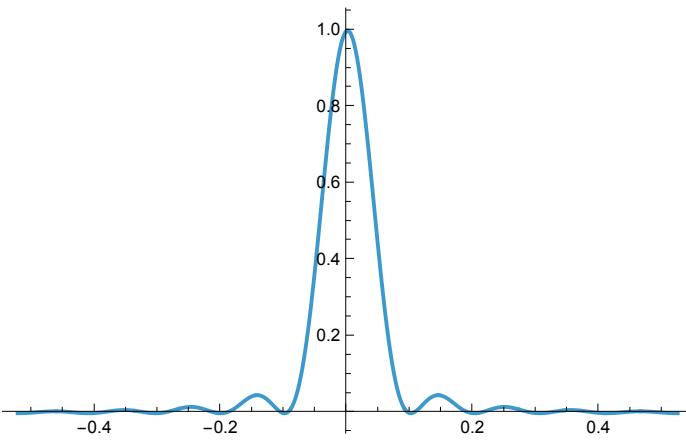
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In[1]:= (* single slit pattern then double slit *)

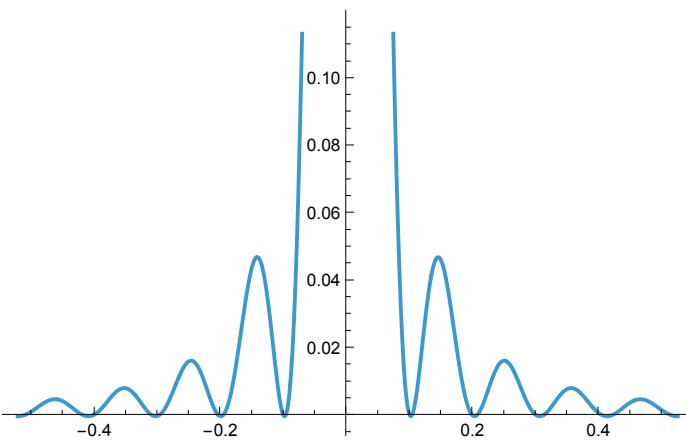
In[2]:= a = 4.05 * 10^(-6)
Out[2]= 4.05 × 10-6

In[3]:= λ = 405 * 10^(-9)
          81
Out[3]= ───────────
          200 000 000

In[4]:= Intensity1[θ_] := (Sin[Pi*a*Sin[θ] / λ] / (Pi*a*Sin[θ] / λ)) ^ 2
In[5]:= Plot[Intensity1[θ], {θ, -Pi/6, Pi/6}, PlotRange → Full]

Out[5]=
A plot showing the intensity distribution for a single slit. The x-axis represents the angle θ from -0.4 to 0.4, and the y-axis represents intensity from 0 to 1.0. The curve starts near zero at -0.4, has a small peak around -0.3, a larger peak at -0.1, and a very sharp, dominant peak at θ=0 reaching a height of 1.0. It then decreases sharply, with smaller peaks and dips at θ ≈ ±0.15, ±0.25, and so on, returning towards zero at ±0.4.

In[6]:= Plot[Intensity1[θ], {θ, -Pi/6, Pi/6}]

Out[6]=
A plot showing the intensity distribution for a double slit. The x-axis represents the angle θ from -0.4 to 0.4, and the y-axis represents intensity from 0 to 0.10. The curve starts near zero at -0.4, has a small peak around -0.3, a larger peak at -0.1, and a very sharp, dominant peak at θ=0 reaching a height of approximately 0.12. It then decreases sharply, with smaller peaks and dips at θ ≈ ±0.15, ±0.25, and so on, returning towards zero at ±0.4.

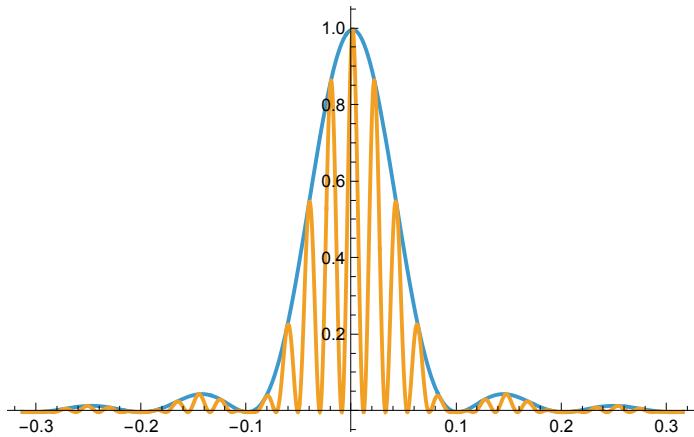
In[7]:= (* now double slit pattern *)

In[8]:= d = 1.944 * 10^(-5)
Out[8]= 0.00001944

In[9]:= Intensity2[θ_] := Intensity1[θ] * Cos[Pi*d*Sin[θ] / λ]^2

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In[10]:= Plot[{Intensity1[\theta], Intensity2[\theta]}, {\theta, -Pi/10, Pi/10}, PlotRange -> Full]
Out[10]=
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In[12]:= Plot[{Intensity1[\theta], Intensity2[\theta]}, {\theta, 0.03, 0.25}, PlotRange -> Full]
Out[12]=
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