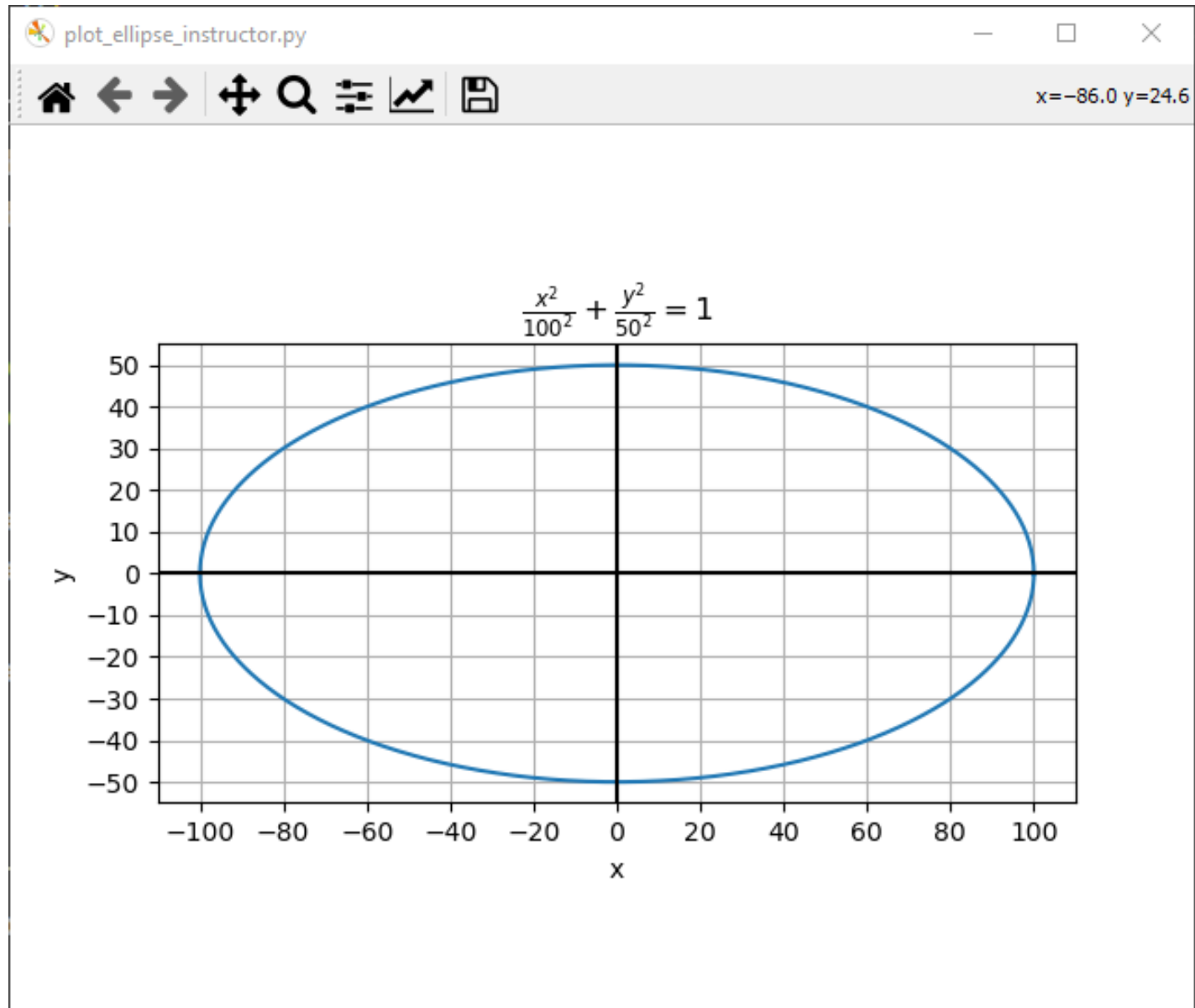


Task 06-01

- Create a Python program called **plot_ellipse.py** that displays the full 2D graph of an ellipse having these parameters:
 - A major axis of length 100 (along the x-axis)
 - A minor axis of length 50 (along the y-axis)
 - Centered at the origin
- First, calculate the points on the perimeter of the ellipse using polar coordinates
 - Sweep through the interval
 - Then find the radius at each using a formula that converts the Cartesian coordinates for an ellipse into polar coordinates
- Second, convert the theta and radius arrays to Cartesian coordinates and graph them using a line plot
- Upload your solution to the BNL QIS101 SharePoint site

Task 06-01



Task 06-02

- Create a Python program called **random_walk_gamma.py** that plots the expected final distance of a uniform random walk of N steps on a unit lattice having dimension d
- Use the following formula to calculate the expected (mean) value of the final distance from the origin for dimension d where Γ is Euler's Gamma function and N is the number of steps:
$$\langle R \rangle = \sqrt{\frac{N}{d}} \frac{\Gamma(d/2)}{\Gamma(d/2 - 1)}$$
- Evaluate $\langle R \rangle$ for not just $d=2$ with the number of steps
- Upload your solution to the BNL QIS101 SharePoint site