

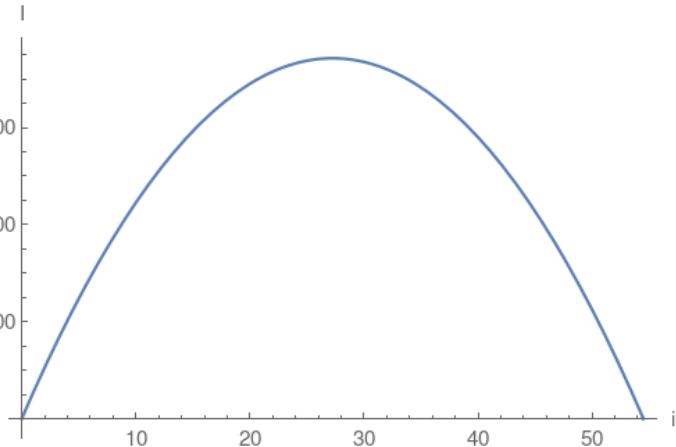
4.

4. Perimeter of rectangle =  $2(i+a)=109$  where  $a$  is the length of the other edge of rectangle. Area of the rectangle is  $= i \times a$ .

Use perimeter equation

and solve for  $a = \frac{109-2i}{2}$

Then reformulate the area  $I = i \times a = \frac{109i}{2} - i^2$  which turns out to be a quadratic Parabola:



Compute the vertex  $\frac{109}{4}$  and then plug the vertex into the area which will compute the maximum area.