

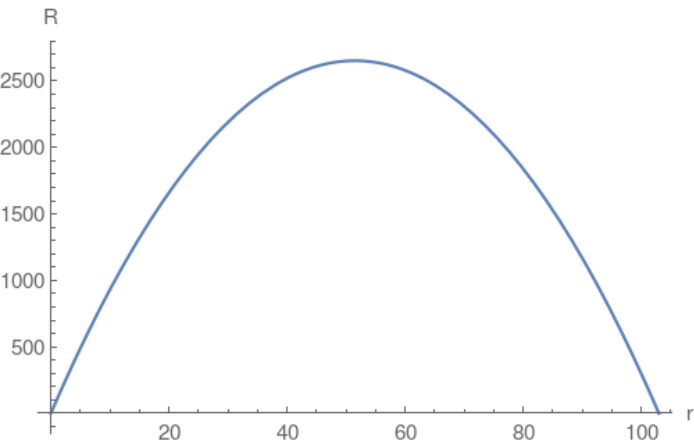
1.

1. Perimeter of rectangle = $2(r+a)=206$ where a is the length of the other edge of rectangle. Area of the rectangle is = $r \times a$.

Use perimeter equation

and solve for $a = \frac{206-2r}{2}$

Then reformulate the area $R = r \times a = 103r - r^2$ which turns out to be a quadratic Parabola:



Compute the vertex $\frac{206}{4}$ and then plug the vertex into the area which will compute the maximum area.