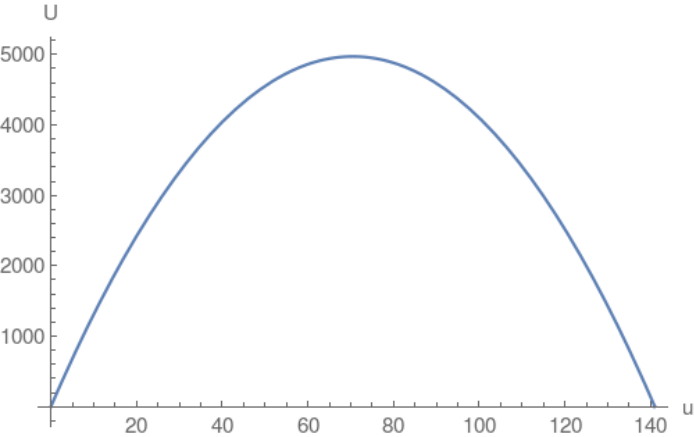
3.

3. Perimeter of rectangle = $2(u+a)=282$ where a is the length of the other edge of rectangle. Area of the rectangle is = $u \times a$.
Use perimeter equation
and solve for a= $\frac{282-2u}{2}$

Then reformulate the area U= $u \times a = 141\,u - u^2$ which turns out to be a quadratic Parabola:



Compute the vertex $\frac{282}{4}$ and then plug the vertex into the area which will compute the maximum area.