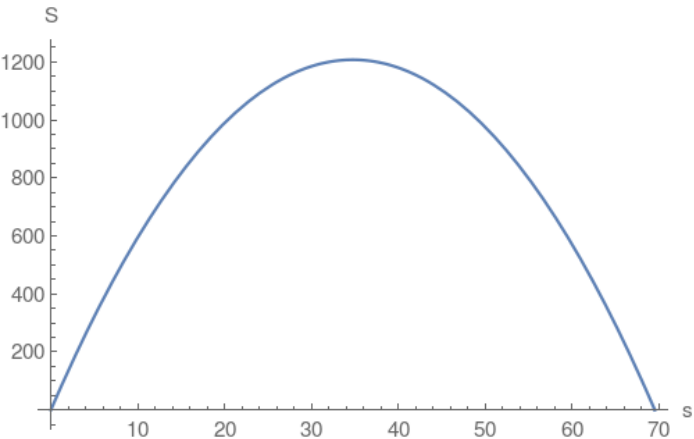
4.

4. Perimeter of rectangle $= 2(s+a) = 139$ where a is the length of the other edge of rectangle. Area of the rectangle is $= s \times a$.
Use perimeter equation
and solve for $a = \frac{139-2s}{2}$

Then reformulate the area $S = s \times a = \frac{139\,s}{2} - s^2$ which turns out to be a quadratic Parabola:



Compute the vertex $\frac{139}{4}$ and then plug the vertex into the area which will compute the maximum area.