1.

1. Since the fences enclose a rectangular plot without one side, two sides have length b and one side has length a:

$a+b+b=4986 \implies a=4986-2b$

the area:

$area=a \times b=(l-2b)b=4986b-2b^2$

Note that the equation is for parabola. Now solve for the vertex:

$vertex=(\frac{2493}{2} \text{ ft}, \frac{6\,215\,049}{2} \text{ ft}^2)$

Square the unit for vertex's vertical coordinate since it is a quadratic.