# 1.

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

$a+b+b=4462 \implies a=4462-2b$

the area:

$area=a\times b=(l-2b)b= 4462 b - 2 b^2$

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

$vertex= (\frac{2231}{2}$ yd $, \frac{4\,977\,361}{2}$ yd$^2$ $)$

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