

4.

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

$$a + b + b = 1148 \implies a = 1148 - 2b$$

the area:

$$\text{area} = a \times b = (1148 - 2b)b = 1148b - 2b^2$$

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

$$\text{vertex} = (287 \text{ ft}, 164738 \text{ ft}^2)$$

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