

4.

4. There are 3 sides to fence, two sides with length b and one side with length a :

$$a+b+b=2903 \Rightarrow a=2903-2b$$

Now find the area:

$$\text{area}=a \times b = (1-2b)b = 2903b - 2b^2$$

Notice the Parabolic equation, find the vertex:

$$\text{vertex} = \left(\frac{2903}{4} \text{ meters}, \frac{8427409}{8} \text{ meters}^2 \right)$$

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