

4.

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

$$a + b + b = 4970 \implies a = 4970 - 2b$$

the area:

$$\text{area} = a \times b = (4970 - 2b)b = 4970b - 2b^2$$

Note that the function is for parabola. Now find the vertex:

$$\text{vertex} = \left(\frac{2485}{2} \text{ m}, \frac{6175225}{2} \text{ m}^2 \right)$$

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