

4.

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

$$a+b+b=2187 \Rightarrow a=2187-2b$$

Now solve for the area:

$$\text{area}=a \times b = (1-2b)b = 2187b - 2b^2$$

Notice the Parabolic equation, solve for the vertex:

$$\text{vertex} = \left( \frac{2187}{4} \text{ ft}, \frac{4782969}{8} \text{ ft}^2 \right)$$

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