4.

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

$a+b+b=2774 \implies a=2774-2b$

the area:

$area=a\times b=(l-2b)b= 2774 b - 2 b^2$

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

$vertex= (\frac{1387}{2} \text{ feet} , \frac{1923769}{2} \text{ feet}^2)$

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