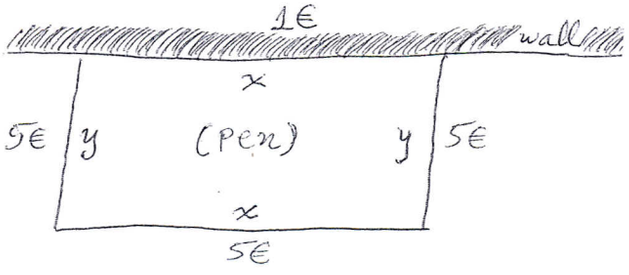
The Animal Pen Problem

You must build a rectangular holding pen for animals. To save material, you will use an existing wall as one of its four sides. The fence for the other three sides costs 5€/m, and you must spend 1€/m to paint the portion of the wall that forms the forth side of the pen. If you have a total of 180€ to spend, what dimensions will maximize the area of the pen you can build?



1. Express the area A of the pen as a function of the length x and width y

2. Condition of total Cost.

3. Express the area A as a function of the length x

4. Specify the domain of values of the independent variable x.

5. Give an answer to the problem, by sketching $A(x)$. (hint: find the points where the graph of $A(x)$ intresects the x-axis)