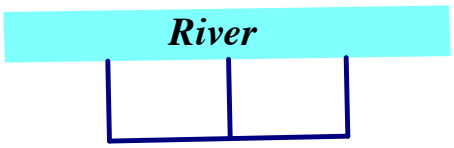
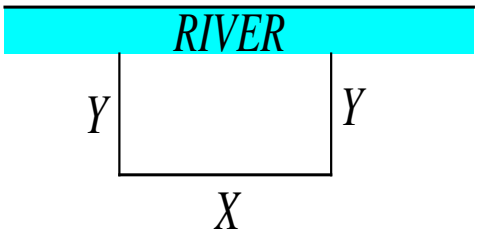
Calculus AB HW 3.7 **Name :** _____ **Per :** ____

1) A farmer plans to fence two rectangular pastures adjacent to a river. The farmer has 102 feet of fence in which to enclose the pasture. What dimensions should be used so that the enclosed area will be a maximum? What is the maximum area?



2) A farmer plans to fence a rectangular pasture adjacent to a river. The farmer needs an enclosure that has an area of $98ft^2$. What dimensions should be used so that the farmer uses the least amount of fence? How much fence is needed?

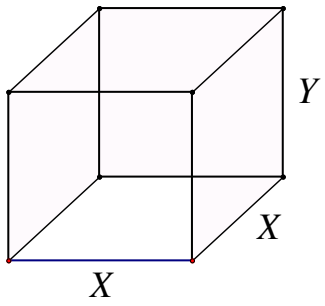


3) You have 48 ft. of fencing and wish to fence off three adjacent rectangular fields as shown below.

a) What length and width should the region be so that its area is a maximum? _____

b) What is the area? _____

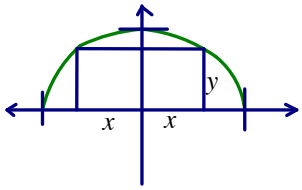
4) A crate, open at the top, has vertical sides, a square bottom and a volume of 4000 ft^3. What dimensions give us minimum surface area? What is the surface area?



5) A rectangle is bounded by the x-axis and the equation $y = \sqrt{242 - x^2}$.

a) What length and width should the region be so that its area is a maximum? _____

b) What is the area? _____



6) A rectangular package to be sent by a postal service can have a maximum combined length and girth (perimeter of cross section) of 66 inches.

a) Find the dimensions of the package of maximum volume that can be sent. _____

b) What is the maximum volume? _____