4.4 Modeling and Optimization

Ex 1) Find the maximum area of a rectangle with perimeter = 8.

Ex 2) A rectangular pen is enclosed by fencing. There is also a fence through the middle which separates the pen into 2 equal rectangles. If the total area is $216m^2$, what is the least amount of fencing needed?

Ex 3) A rectangle is positioned so its base is on the x-axis and its other two vertices are on $y = 12-x^2$. Find the maximum area.