

You must build a rectangular holding pen for animals (apologies for the authoritarian tone in the phrasing of this problem, which I took from the book). To save material, you will use an existing wall as one of its four sides. the fencing for the other three sides costs \$5/ft and you must spend \$1/ft to paint the existing wall. If you have a total of \$180 to spend, what dimensions will maximize the area of the pen. See picture below.

- (a) Express the area of the pen as a function A of x .
- (b) Find the highest point on the graph of A by finding where the slope of the tangent to A is 0. You may use the formula for the slope of the tangent to a parabola we derived on Tuesday.
- (c) Use your answer from (b) to find the dimensions that maximize A .