

Problem 1

Suppose we want build a rectangular fence along a straight river (one side doesn't need fence) and we need the enclosed area to be 200ft.^2 . What is the least amount of fence we could use? What are the dimensions of the resulting fence?

Problem 2

Find the dimensions of the largest rectangle that can fit in a semicircle of radius 3.

Problem 3

What point on the graph of $y = \sqrt{x}$ is closest to the point $(\frac{3}{2}, 0)$?

Hint: The distance between two points $(x_1, y_1), (x_2, y_2)$ is $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$, and all of the points on the graph of $y = \sqrt{x}$ are of the form (x, \sqrt{x}) .