

Quiz

Name

1. A function $f(x)$ with the following properties is given: $f(x)$ is differentiable for all x and $f(x) > 0$ for all x . Let $x > 0$ be arbitrary and consider the rectangle that has the interval $[0, x]$ as one side and the segment from $(x, 0)$ to $(x, f(x))$ as another. In the space below, draw: an x - y coordinate system, the graph of one such function, and one rectangle that satisfies the stated conditions.

2. Express the area of the rectangle as a function of x .

3. Suppose that the rectangle has the largest area that such a rectangle can have when $x = c$. Show that the diagonal of the rectangle from $(0, f(c))$ to $(c, 0)$ is parallel to the tangent to the graph of $f(x)$ at the point $(c, f(c))$.