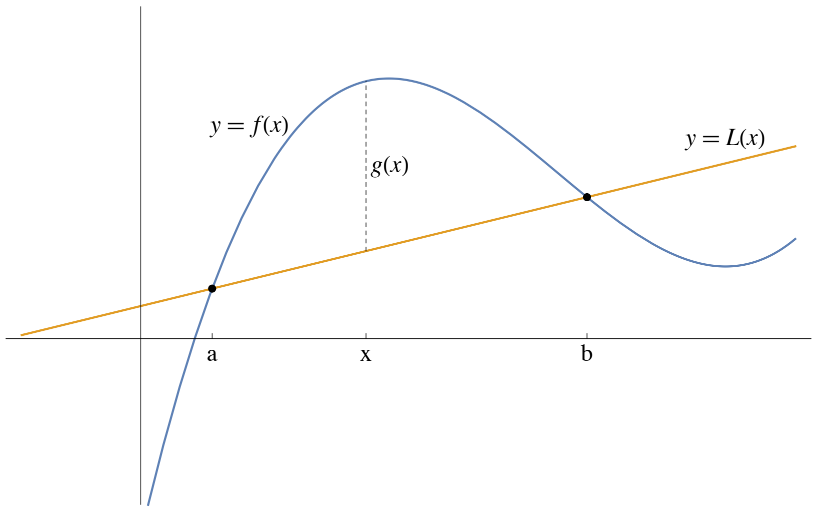
Assume that $f(x)$ is a differentiable function on the interval $[a, b]$, as shown in the graph.



The slope of the secant line, expressed in terms of f, is ____________ .

Let's call that slope above m for short. Now, write down an equation for this secant line in point-slope form:

____________________________.

Rewriting this point-slope form equation, we see that the linear function $L(x)$ describing the secant line is given by

$$L(x) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_$$

Let $g(x)$ denote the difference between the functions $f(x)$ and $L(x)$. In symbols, that is,

$$g(x) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_$$

By the Sum/Difference rule for derivatives, we know that g is _________________ on $[a, b]$ and

$$g'(x) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_$$

And since $L(x)$ is a linear function with slope m, that can be written more simply as

$$g'(x) = \_\_\_\_\_\_\_\_\_\_\_\_\_$$

Also, we can see that $g(a) =$ ______ and $g(b) =$ ______.

So, we can apply ________ Theorem to the function _____ on the interval ______.

That lets us conclude that there is at least one point c in ______ where ____________.

But $g'(c) =$ _____________. So we can conclude that _____________, qed.