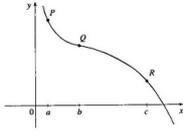


GROUP WORK 1, SECTION 3.1
Order from Chaos

Below is the graph of the function $f(x)$.



1. Place the following quantities in order, from lowest to highest: $f'(a)$, $f'(b)$, the slope m_{PQ} of the secant line PQ , the slope m_{QR} of the secant line QR , and $\frac{f(c) - f(a)}{c - a}$. Make sure to give justification for your answers.

Oct 1-7:36 AM

10/3/12

--to be able to find the slope of the tangent line to a curve at a specified point.

Calculus grew out of four major problems that European mathematicians were working on during the 17th century:

- 1) The tangent line problem
- 2) The velocity and acceleration problem
- 3) The maximum and minimum problem
- 4) The area problem

Each of these problems is related to limits.

Oct 5 - 7:24 AM

Identifying a tangent line:

In your calculator, graph the function

$$f(x) = 2x^3 - 4x^2 + 3x - 5$$

On the same screen graph $y = x - 5$, $y = 2x - 5$, and $y = 3x - 5$. Which of these lines, if any, appears to be tangent to the graph of $f(x)$ at the point $(0, -5)$?

Therefore, what is your hypothesis about the slope of the line tangent to the graph of $f(x) = 2x^3 - 4x^2 + 3x - 5$ at the point $(0, -5)$?

Oct 5 - 7:30 AM

The problem of finding a tangent line to a curve at point P comes down to the problem of determining the slope of the tangent at that point.

We can approximate the slope of the tangent by finding the slope of a secant line, using point P and another point extremely close to point P .

In this way, we are finding the limit of the slope as the second point that we choose moves closer and closer to P .

Oct 5 - 7:33 AM

$$\lim_{h \rightarrow 0} \frac{\cos(x+h) - \cos x}{h}$$

is equivalent to the derivative of _____.

Oct 3-9:58 AM

HW--text--p. 104 #5, 7, 9, 25, 26, 27

Oct 5 - 7:39 AM