Items to be Assessed on Introductory Calculus Test

1. Given a graph, find the rate of change at a specific x-value.

Find the *average rate of change* (gradient).

This means between two points. Always include units as a unit rate.... per one of something. For example 5.3 chickens per day, $32.15 per hour, etc

**Estimate** the instananeous rate of change from a graph at a specified point (using a hand drawn tangent, ruler is a must) (same reminder as above about units)

1. Use the rules of finding the derivative (also called “Differentiate a function”)

For functions in the form $ax^{n} where n is an integer$

1. Also be able to then calculate the gradient at a specified x-value and show your work.
2. Calculator skills: On typical or non-typical functions.... use GDC to:
* Calculate the *gradient* at a given location
* Calculate the *equation of a tangent line* at a given location

Memorize the steps for your calculator

1. Determine equations of **tangent lines** by using derivatives, showing your work. (in *Point-Slope form*) at specified locations.
2. Determine equations of **NORMALS** and find intersections where they might intersect with other points on graphs.
3. Use calculus methods to find Stationary Points. (locations of maximums and minimums.)  *Calculus methods means finding the derivative, setting equal to 0 and solving.*
4. Given a function, find locations (x-values) where a certain gradient (slope) occurs.

*By Setting the derivative equal to the desired gradient.*

1. Use calculus methods from this unit to Optimize a situation. This means that you will be finding locations of minimums or maximums to optimize a situation. *Always make a summary statement at the end that answers the main question.*

*You should be able to write appropriate notation when you show your work.*

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You will not be required to use First Principles (the "Algebraic" Method) to find the derivative.

Allowed if you are willing to cap your score at 90%

One page of notes with:

* Explanations of procedures
* No worked examples
* Calculator instructions
* Must be turned in with your test