**Lesson 5 Student Assignment 1**

**Lesson 5: Learning Intentions:**

* *Students will be able to identify the slope of a tangent to a curve as the instantaneous rate of change.*
* *Students will be able to write down the first derivative of a polynomial of the form axn.*

**Success Criteria:**

*I can calculate the rate of change of a quadratic function (axn) by:*

* *Using a graph and a table to create a pattern.*
* *Working with different examples to find a pattern.*
* *Write a rule that works for any function of the form axn.*
* *Record the key learning points in my notes.*

**Instructions for assignment 1:**

Open the geogebra file:<https://www.projectmaths.ie/geogebra/rates-of-change-of-a-quadratic-function/>

Use the geogebra file to help you to investigate the problem below. Please submit your answer and supporting arguments by 08:00 tomorrow. Provide as much detail as possible.

You can submit your solutions by:

1. Uploading a photo of your work.
2. Uploading a document with a typed solution.

For additional help with using the GeoGebra file, please watch the supporting video:

<https://youtu.be/cXyh-zQKCQ8>

Task:

1. Write down the rate of change of the function f(x)=x2 at the each of the following points:

(-4, 16), (-3, 9), (-2, 4), (-1, 1), (0, 0), (1, 1), (2, 4), (3, 9)

1. What is the rate of change of the function f(x)=x2 at the point (7,49)?
2. What is the rate of change of the function f(x)=x2 at the point (12,144)?
3. What is the rate of change of the function f(x)=x2 at the point (20,400)? Justify your solution.