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**MST129: Applied Calculus**

**Tutor Marked Assignment**

Cut-Off Date: December --, 2021 Total Marks: 40

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I hereby declare that this submitted TMA work is a result of my own efforts and I have not plagiarized any other person's work. I have provided all references of information that I have used and quoted in my TMA work.

**Student Name :** \_\_\_Nancy Al Aswad - 2180385

**Signature :** \_\_\_\_\_\_\_\_ Nancy \_\_\_\_\_\_\_\_\_

**Date :** \_\_\_\_\_01/12/2021 \_\_\_\_\_\_

**MT129 TMA Feedback Form**

**[A] Student Component**

**Student Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Student Number : \_\_\_\_\_\_\_\_\_\_\_\_**

**Group Number : \_\_\_\_\_\_\_**

**[B] Tutor Component**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Comments** | | **Weight** | | **Mark** |
| **Q\_1** |  | | **5** | |  |
| **Q\_2** |  | | **5** | |  |
| **Q\_3** |  | | **5** | |  |
| **Q\_4** |  | | **5** | |  |
| **Q\_5** |  | | **5** | |  |
| **Q\_6** |  | | **5** | |  |
| **Q\_7** |  | | **5** | |  |
| **Q\_8** |  | | **5** | |  |
|  |  | | **40** | |  |
|  | |  | |  |  | |
| **General Comments:** | | | | | | |
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|
|
|  | | **Tutor name:** | |  |  | |

**Please solve each question in the space provided. You should give the details of your solutions and not just the final results.**

**Q−1: [**5 **marks]** Given and , find the composition and the domain of .

# Answer:

**=====**

**First step**: I solve the composition equation as follow

**The domain of**

**Q−2: [2+3 marks]** Solve for the following equations:

1. .
2. .

**Q−3: [5 marks]** Use the definition of the derivative to find the derivative of .

**Q­−4: [5 marks]** **[**5 **marks]** Let. Find the point(s) on the graph of at which the tangent line is horizontal.

**Q­−5**: **[5 marks] [**5 **marks]** Let . Find the interval on which is increasing or decreasing, and find the local maximum and minimum, if any.

**Q−6:****[5 marks]** A square sheet of cardboard with each side  centimeters is to be used to make an open-top box by cutting a small square of cardboard from each of the corners and bending up the sides. What is the side length of the small squares if the box is to have as large a volume as possible?

**Q­−7:****[**5 **marks]** Find the equation of the tangent line to the graph of  at the point .

**Q­−8:****[5 marks]** Consider the function . Using the logarithmic differentiation find an equation of the line tangent to the graph of at .

# Answer:

**=====**