

CALCULUS 12 LG 10/11

FUNCTION ANALYSIS



INTRODUCTION:

The first and second derivatives can be a very helpful tool in determining properties of a function as well as aiding in sketching the function.



LEARNING GUIDE EXPECTATIONS:

On the completion of this learning guide you will be able to:

- 1) relate the sign of the derivative on an interval to whether the function is increasing or decreasing.
- 2) relate the sign of the second derivative to the concavity of a function.
- 3) determine the critical points and inflection points of a function.
- 4) determine the maximum and minimum values of a function and use the first and/or second derivative tests to justify their solutions.



EVALUATION:

When you are ready, write the LG 10/11 quiz.



RESOURCES NEEDED:



Calculus 12 text.



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LEARNING ACTIVITIES



Expectation #1: Relate the sign of the derivative on an interval to whether the function is increasing or decreasing.



Expectation #2: Relate the sign of the second derivative to the concavity of a function.



Expectation #3: Determine the critical points and inflection points of a function.



Expectation #4: Determine the maximum and minimum values of a function and use the first and/or second derivative tests to justify their solutions.



1. [Watch and take notes on instructional video on Increasing/Decreasing/Concavity.](#)



2. In Chapter 5.1, read pages 290-296.



3. In your journal, using an example, describe how to determine the following:

- I. if a function is increasing or decreasing.
- II. if a function is concave up or concave down.
- III. the location of inflection points.



4. On pages 296-297, complete questions #1, 7, 9-31.



5. In Section 5.2, read pages 299-303.



6. In your journal, using an example, describe how to determine the following:

- I. how to find a relative maximum and relative minimum.
- II. the location and difference between critical points and stationary points.



7. On pages 304-305, complete questions #1, 3, 7-12, 15, 17, 21-33, 39, 41, 43.

Once you feel you are ready for the LG 10-11 quiz, complete the LG 10-11 Assessment Quiz on the website under "Assessment Quizzes" and then email your marked LG 10-11 quiz to your teacher along with any questions you may have. Please email your quiz as a pdf combined into 1 file and attach it to an email. You may email either version A or version B of the LG assessment quizzes.