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 in the test centre.

RESOURCES NEEDED:

Calculus 12 text.

www.thssmath.com

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.