

Chapter 3: Derivatives and Graphs

Upon successful completion of Chapter 3, the student should be able to:

State whether a given point on a graph is a “global/local maximum/minimum”

Find critical points and extreme values (max/min) of functions by using derivatives.

Graphically and using derivatives, find the values guaranteed to exist by Rolle’s Theorem and by the Mean Value Theorem

Use the graph of f to sketch the shape of the graph of f'

Use values of f' to sketch the graph of f and state whether f is increasing or decreasing at a point

Use values of f'' to determine the concavity of the graph of f

Use the graph of f to determine if f'' is positive, negative or zero

Solve applied max/min problems by using derivatives.

Restate in words the meanings of the solutions to applied problems, attaching the appropriate units to an answer.

Determine asymptotes of a function by using limits.

Determine the values of “indeterminant form” limits by using derivatives and L’hopital’s Rule.