

## AP Calculus (BC)

### *Differentiation*

The list below contains the *learning targets* for the unit on differentiation. Before the unit test, you should be able to place a check next to each statement as being true.

- I can differentiate basic functions, including:
  - power
  - exponential
  - logarithmic
  - trigonometric
  - inverse trigonometric
- I can differentiate functions involving products and quotients.
- I can perform the Chain Rule to differentiate composed functions.
- I understand the Leibniz notation definition for the Chain Rule.
- I can find higher-order derivatives.
- I can differentiate implicitly-defined functions.
- I can find the derivative of an inverse function.
- I can use logarithms to differentiate functions in the form  $f(x)^{g(x)}$ .

### Textbook Assignments

The exercises below are from *Calculus: Graphical, Numerical, Algebraic* by Finney, Demana, Waits, and Kennedy. These specific problems are the bare minimum that should be completed after each lesson, but you are encouraged to attempt more if needed.

- 3.3 Differentiation Rules **pg 120: 9, 11, 15, 17, 23, 28, 29, 32, 33, 34**
- 3.5 Trigonometric Derivatives **pg 140: 2, 4, 8, 13, 21, 27, 28, 29**
- 3.6 Chain Rule **pg 146: 1, 7, 9, 13, 15, 21, 27, 29, 53, 57, 60-66**
- 3.7 Implicit Differentiation **pg 155: 9, 10, 17, 20, 23, 27, 33, 39, 41, 44, 47**
- 3.8 Inverse Trigonometric Derivatives **pg 162: 1, 3, 17, 19, 20**
- 3.9 Exponential Derivatives **pg 170: 5, 7, 9, 13, 15, 16, 17, 41, 47**
- 3.9 Logarithmic Derivatives **pg 170: 21, 27, 29, 33, 35, 48**
- 3.9 Logarithmic Differentiation **pg 170: 19, 43-46**

*Assignments are subject to change in class.*