

AP Calculus (BC)

Integrals

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

- I can find the general and particular antiderivatives for a function.
- I understand the connections between area and definite integrals.
- I can use Riemann sums to define definite integrals.
- I can use rectangles and trapezoids to approximate definite integrals.
- I can evaluate definite integrals using the following approaches:
 - geometry
 - technology (numerical integral function)
 - antiderivatives (Fundamental Theorem of Calculus)
- I can find the average value of a function over a domain.
- I understand the connections between the Mean Value Theorem and average value.
- I understand the use of integral functions to describe accumulation.
- I can differentiate integral functions using the Fundamental Theorem of Calculus.

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.

- 6.1 Antiderivatives **pg 312: 1-6, 31-36, 39, 41**
- 5.1 Rectangle Approximation Methods **pg 254: 7, 9, 12, 21, 25**
- 5.2 Riemann Sums / Definite Integrals **pg 267: 3, 5, 10, 13, 15, 19, 39, 42**
- 5.3 Definite Integrals **pg 274: 1, 7, 11, 13-16, 17, 23**
- 5.3 Average Value **pg 274: 25-32**
- 5.4 Fundamental Theorem of Calculus **pg 286: 9, 19, 35, 37, 39, 41, 43, 49, 53, 60**
- 5.5 Trapezoidal Rule **pg 295: 3, 5, 7, 8, 21**

Assignments are subject to change in class.