

Honors Calculus

Integration

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

- I can use the $\int dx$ operator notation to define integration in terms of antidifferentiation.
- I can integrate using basic antiderivatives, including those involving the power rule and trigonometric functions.
- I can solve differential equations (initial value problems) using integration.
- I can describe the relationship between area and definite integrals over an interval.
- I can use Riemann sums and trapezoids to approximate area and definite integrals.
- I can use the Fundamental Theorem of Calculus to evaluate definite integrals.
- I can use a change of variables (u -substitution) to evaluate integrals.

Textbook Assignments

The exercises below are from *Calculus of a Single Variable, 7th edition*, by Larson, Hostetler, and Edwards. These specific problems are the bare minimum that should be completed after each lesson, but you are encouraged to attempt more if needed.

- 4.1 Antiderivatives **pg 249: 11, 12, 13, 14, 21, 22, 27, 28, 29, 31, 33, 35, 37, 39, 41**
- 4.1 Initial Value Problems **pg 249: 57, 58, 61, 62, 63, 69, 73, 77**
- 4.2 Rectangle Approximation **pg 262: 23, 26, 27, 29, 30, 63, 65**
- 4.3 Definite Integrals **pg 272: 9, 11, 17, 19, 21, 35, 39, 41, 43, 45**
- 4.4 Fundamental Theorem of Calculus **pg 284: 11-22, 27-32**
- 4.4 Fundamental Theorem of Calculus **pg 284: 23-26, 33, 37, 38, 39, 43, 55-59**
- 4.5 u -Substitution **pg 297: 1-6, 11, 15, 19, 23, 25, 41, 43, 45, 47, 49**
- 4.5 u -Substitution **pg 297: 35, 37, 55, 65, 67, 69, 71, 75, 79, 81, 87**
- 4.6 Trapezoid Rule **pg 305: 5, 9, 11, 19, 20, 43**