

MATH 150

Today

1. 7.3 Definite integrals

Goals:

1. Definite integrals (Understand the definition of the definite integral and its interpretations)
2. Properties of definite integrals (Understand the algebraic properties and manipulation of limits for definite integrals)
3. Computation of definite integrals (Understand how to use the summation formulas we've learned to evaluate definite integrals exactly)

Where is today's material used?

1. Physics (distance traveled, mass of an object, volume of an object, total charge, ...)
2. Economics (interest, marginal revenue/cost/profit to change in revenue/cost/profit, the multiplier effect)
3. Chemistry (physical chemistry)

Definite Integrals

1. Definition ($\int_a^b f(x)dx = \lim_{n \rightarrow \infty} \sum_{k=1}^n f(x_k^*)\Delta x$, where $\Delta x = \frac{b-a}{n}$, $x_k = a + k\Delta x$, and $x_k^* \in [x_{k-1}, x_k]$)
2. Properties (sum and constant multiple rules, limits of integration)
3. Examples. p. 489: [21](#), [24](#), 25, 31, [32](#), [33](#), 36, [41](#), [44](#), 45, [46](#)

Next Time

1. 7.4: Indefinite integrals [16 min]