

MATH 3B

Discussion Worksheet - Thursday, April 5

TA Info:

- TA's Name:
- Office Location:
- Math Lab Location, Day, and Time:
- Email:
- Office Hour:

Definitions and Examples:

- General Antiderivatives:
 - The Anti-Power Rule: $\int x^n dx =$
 - Properties of the integral: $\int k \cdot f(x) dx =$ $\int f(x) + g(x) dx =$
 - Examples: Find the general antiderivative for each of the following functions:
(1) $f(x) = -2x^4 - \sqrt[3]{x}$ (2) $g(x) = \frac{-2x^4 - \sqrt[3]{x}}{x^2}$

- Riemann Sums:

- Right-Endpoint Riemann Sum of $f(x)$ from $x = a$ to $x = b$: $R_n = \sum_{i=1}^n f(x_i) \Delta x$
- Left-Endpoint Riemann Sum of $f(x)$ from $x = a$ to $x = b$: $L_n = \sum_{i=0}^{n-1} f(x_i) \Delta x$

where $\Delta x =$

and $x_i =$

- We use Riemann sums to compute the area under the curve given by

$$A = \quad = \quad =$$

- Example: Using the Right-Endpoint Riemann Sum, compute the area under the curve given by the function $f(x) = x^2 + 1$ on the interval $[1, 4]$ using 3 approximating rectangles:

$$\Delta x = \quad x_i = \quad \text{so, } x_1 = \quad x_2 = \quad x_3 =$$

$$R_3 =$$