ACMAT161 Summer 2024
Professor Manguba-Glover
Homework 21 Name: _____

Show all work, simplify, and box your answers. If you do the problem incorrectly, or don't show sufficient work, you will be asked to rewrite the problem for full credit.

Due next class. Students who turn assignments in late (or do not attempt a problem) forfeit their ability to rewrite those problems for credit.

1. Use finite approximations to estimate the area under the graph of the function using left-endpoints with four rectangles of equal width.

$$f(x) = x^3 \text{ between } x = 0 \text{ and } x = 1$$

2. Use finite approximations to estimate the area under the graph of the function using right-endpoints with four rectangles of equal width.

$$f(x) = x^3 \text{ between } x = 0 \text{ and } x = 1$$

3. Use mid-points to approximate the area below $x^2 + 6$ from $x = 0$ to $x = 6$ using 3 rectangles.
4. Use left endpoints to approximate the area under $x^3 + 1$ from $x = 0$ to $x = 6$ using 12 rectangles.
5. Use right endpoints to approximate the area under $x^3 + 1$ from $x = 0$ to $x = 6$ using 12 rectangles.
6. Use midpoints to approximate the area under $x^3 + 1$ from $x = 0$ to $x = 6$ using 12 rectangles.