

Another question:

Use the methods we saw in class, do the following.

Suppose that $f(x)$ is defined on the interval $[a, b]$, and $1 < f'(x) < 3$.
Suppose $\Delta x = \frac{b-a}{n}$ and $x_i = a + \Delta x \cdot i$.

A) Explain why

$$\left| \int_{x_i}^{x_{i+1}} f(x) dx - f(x_{i+1}) \Delta x \right| < 3(\Delta x)^2.$$

B) Explain why

$$\left| \int_a^b f(x) dx - R_n \right| < 3 \frac{1}{n} (b-a)^2.$$