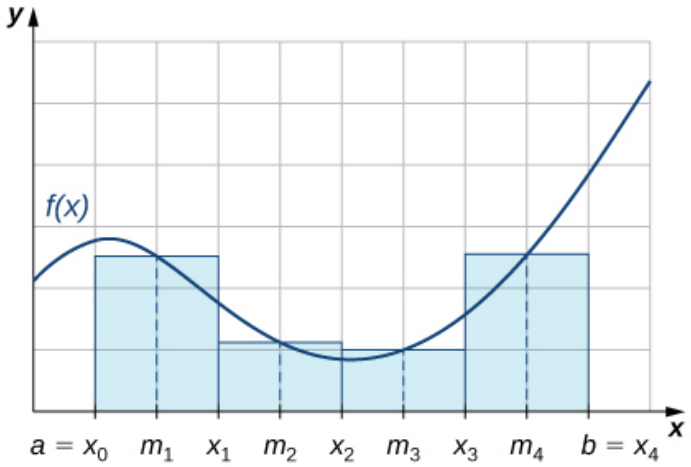
MATH 130A Review: Midpoint Rule

Facts to Know

Integration approximation with the midpoint rule

Picture example



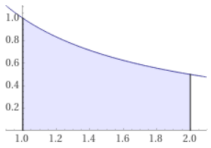
Formal definition

$$\int_a^b f(x)\,dx \approx \qquad ,$$

where

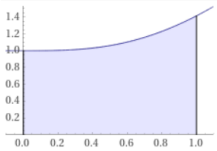
Examples

- Use the midpoint rule with $n = 5$ to approximate $\int_1^2 \frac{1}{x}\,dx$



≈ 0.69315

- Use the midpoint rule with $n = 5$ to approximate $\int_0^1 \sqrt{x^3 + 1}\,dx$



≈ 1.11145

- Use the midpoint rule with $n = 4$ to approximate $\int_0^8 \sin\sqrt{x}\,dx$

≈ 5.9979