Calculus II: The Fundamental Theorem

Your Name

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1 The Fundamental Theorem of Calculus (Part 2)

The second part of the theorem relates the definite integral of a derivative to the net change of the function:

$$\int_a^b f'(x)\,dx = f(b) - f(a)$$

Visual Proof

The visualization below demonstrates this relationship using the function $f(x) = \frac{1}{4}x^2 + 1$.

- **Top Graph:** Shows the function $f(x)$. The tangent triangles illustrate the changing slope $f'(x)$. The brace shows the total vertical change.
- **Bottom Graph:** Shows the derivative $f'(x)$. The shaded area represents the accumulated sum of those slopes.

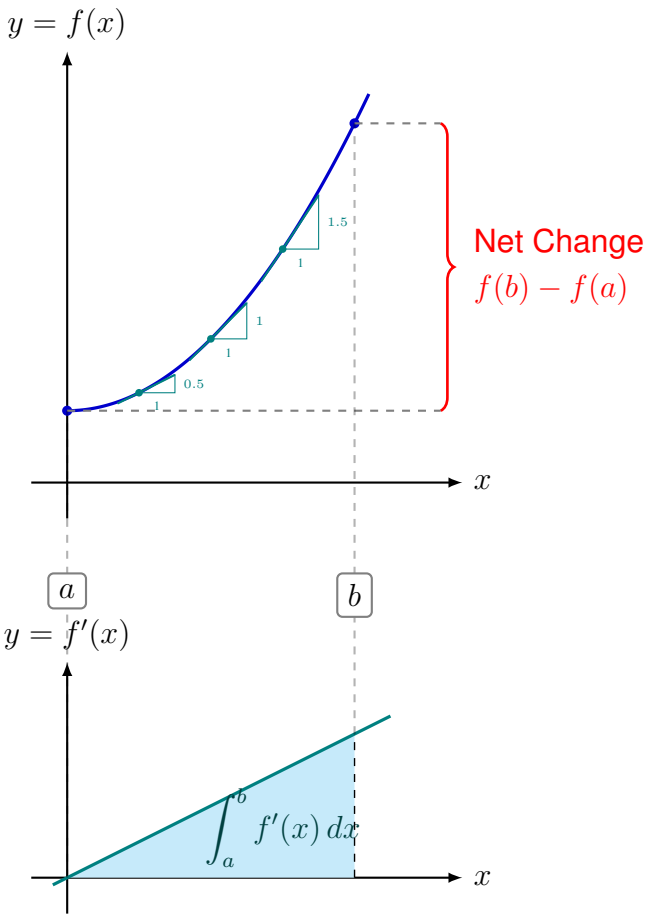

Figure 1: Geometric Interpretation of the Fundamental Theorem of Calculus.