

6.4-The Fundamental Theorem of Calculus

Definition of the "Area Function": Given an integrable function f and a fixed number a , define $g(x) =$

Fundamental Theorem of Calculus, part 1:

Sketch of Proof:

Part 2: If F is an antiderivative of f , then $\int_a^b f(x) dx =$

Examples: find $F'(x)$ if $F(x) = \int_0^x \frac{1}{1+t^4} dt$

Compute $\int_{-1}^2 (4 - x^2) dx$

Compute $\int_{\ln 3}^{\ln 6} (e^x + 1)^2 dx$ (simplified)

Compute $\int \frac{1 + x - x^2}{x^3} dx$

Compute $\int \sec x(\sec x + \tan x) dx$

On Your Own: #1, 3, 7, 9, 11, 19, 23, 27, 31, 41, 47, 51, 57, 73, 77, 79, 83, 93, 95