

FUNDAMENTAL THEOREM; PART II

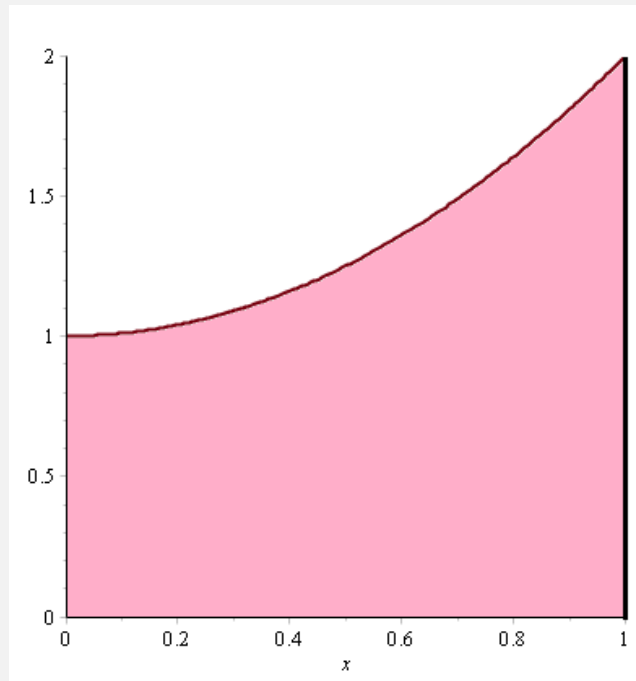
Let $f(x)$ be continuous on $[a, b]$.

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

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

PROBLEM

Determine the value of $\int_0^1 (x^2 + 1) dx$ by using the FTC II.



PROBLEM

Evaluate the definite integrals. Use the FTC II if it applies.

$$(a) \int_1^4 2\sqrt{x} \, dx$$

$$(b) \int_2^3 e^x \, dx$$

$$(c) \int_0^{2\pi} \cos t \, dt$$

$$(d) \int_0^{\pi/6} (1 - \sin \theta) \, d\theta$$

$$(e) \int_{1/16}^{1/4} \frac{\sqrt{x} - 1}{x} \, dx$$

$$(f) \int_2^2 \frac{\sin x}{x} \, dx$$

$$(g) \int_1^4 (1 - x)(x - 4) \, dx$$

$$(h) \int_{-4}^1 |x| \, dx$$

$$(i) \int_3^5 \frac{4}{t} \, dt$$