

en la angla, pri la matematiko

Simplest Examples of the FTC

The Fundamental Theorem of Calculus (FTC) looks like this:

$$\int_a^b f' = f \Big|_a^b .$$

Since $1' = 0$, $i' = 1$, $(i^2)' = 2i$, and $(i^3)' = 3i^2$, we have the following four simplest examples of the FTC:

$$1) \int_a^b 0 = \int_a^b 1' = 1 \Big|_a^b = 1 \cdot b - 1 \cdot a = b - a = 0.$$

$$2) \int_a^b 1 = \int_a^b i' = i \Big|_a^b = i \cdot b - i \cdot a = b - a.$$

$$3) \int_a^b (2i) = \int_a^b (i^2)' = i^2 \Big|_a^b = i^2 \cdot b - i^2 \cdot a = b^2 - a^2.$$

$$4) \int_a^b (3i^2) = \int_a^b (i^3)' = i^3 \Big|_a^b = i^3 \cdot b - i^3 \cdot a = b^3 - a^3.$$
