

$$\int 1 \, dx = x + c, c \in \mathbb{R}$$

$$\int (u(x))^\alpha \cdot u'(x) \, dx = \frac{(u(x))^{\alpha+1}}{\alpha+1} + c, \alpha \in \mathbb{R} \setminus \{0, -1\}, c \in \mathbb{R}$$

$$\int \frac{u'(x)}{u(x)} \, dx = \ln(|u(x)|) + c, c \in \mathbb{R}$$

Common primitives

$$\int e^u(x) \cdot u'(x) \, dx = e^u(x) + c, c \in \mathbb{R}$$

$$\int \sin(u(x)) \cdot u'(x) \, dx = -\cos(u(x)) + c, c \in \mathbb{R}$$

$$\int \cos(u(x)) \cdot u'(x) \, dx = \sin(u(x)) + c, c \in \mathbb{R}$$

Linearity rules of integration

$$\int (f(x) + g(x)) \, dx = \int f(x) \, dx + \int g(x) \, dx$$

$$\int k \cdot f(x) \, dx = k \int f(x) \, dx$$

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

$$\int_a^a f(x) \, dx = 0$$

Properties of Definite Integrals

$$\int_a^b f(x) \, dx = \int_a^c f(x) \, dx + \int_c^b f(x) \, dx$$

$$\int_a^b (f(x) + g(x)) \, dx = \int_a^b f(x) \, dx + \int_a^b g(x) \, dx$$

$$\int_a^b k \cdot f(x) \, dx = k \int_a^b f(x) \, dx$$

Barrow's rule

$$\int_a^b f(x) \, dx = F(b) - F(a), \text{ where } F \text{ is primitive from } f \text{ in the interval } [a, b]$$