

$$1. \int_a^a f(x) dx = 0$$

$$2. \int_a^b f(x) dx = - \int_b^a f(x) dx$$

$$3. \int_a^b (f(x) + g(x)) dx = \int_a^b f(x) dx + \int_a^b g(x) dx$$

$$4. \int_a^b cf(x) dx = c \int_a^b f(x) dx$$

$$5. \int_a^b f(x) dx + \int_b^c f(x) dx = \int_a^c f(x) dx$$

$$6. \text{ If } \int_{-a}^a f(x) dx \text{ exists and } f \text{ is an odd function, then } \int_{-a}^a f(x) dx = 0$$

$$7. \text{ If } \int_{-a}^a f(x) dx \text{ exists and } f \text{ is an even function, then } \int_{-a}^a f(x) dx = 2 \int_0^a f(x) dx$$