

Comparison Properties of Definite Integrals

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Property 6:

If

$$f(x) \geq 0 \quad \text{for} \quad a \leq x \leq b$$

then

$$\int_a^b f(x) dx \geq 0$$

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Property 7:

If

$$f(x) \geq g(x) \quad \text{for} \quad a \leq x \leq b$$

then

$$\int_a^b f(x)dx \geq \int_a^b g(x)dx$$

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Property 8:

If

$$m \leq f(x) \quad \text{and} \quad M \geq f(x) \quad \text{for} \quad a \leq x \leq b$$

then

$$m(b - a) \leq \int_a^b f(x) dx \leq M(b - a)$$