

**Dr.SNS RAJALAKSHMI COLLEGE OF ARTS AND SCIENCE
(Autonomous)**

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Coimbatore- 49**



DEPARTMENT OF MATHEMATICS

**21UCR304: BUSINESS CALCULUS AND
FINANCIAL
COMPUTATION**

Determining Definite Integrals of simple functions

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What is a Definite Integral?

- Represents the area or accumulated value
- Has upper and lower limits
- General form:

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

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

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

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

- $\int_0^a x dx = \frac{a^2}{2}$
- $\int_0^a x^2 dx = \frac{a^3}{3}$
- $\int_0^\pi \sin x dx = 2$

if

$$F'(x) = f(x)$$

then

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

Example 1

Evaluate

$$\int_0^2 (3x^2) dx$$

Solution:

$$\int 3x^2 dx = x^3$$
$$[x^3]_0^2 = 8 - 0 = 8$$

Example 2

Evaluate

$$\int_1^3 (2x + 1) dx$$

Solution:

$$\int (2x + 1) dx = x^2 + x$$
$$[x^2 + x]_1^3 = (12) - (2) = 10$$

THANK YOU