

## LIST OF BASIC INTEGRAL FORMULAE

The basic integral formulas are given below:

- $\int 1 \, dx = x + C$
- $\int a \, dx = ax + C$
- $\int x^n \, dx = \frac{(x^{n+1})}{(n+1)} + C$ ;  $n \neq -1$
- $\int \sin x \, dx = -\cos x + C$
- $\int \cos x \, dx = \sin x + C$
- $\int \sec^2 x \, dx = \tan x + C$
- $\int \operatorname{cosec}^2 x \, dx = -\cot x + C$
- $\int \sec x (\tan x) \, dx = \sec x + C$
- $\int \operatorname{cosec} x (\cot x) \, dx = -\operatorname{cosec} x + C$
- $\int (1/x) \, dx = \ln |x| + C$
- $\int e^x \, dx = e^x + C$
- $\int a^x \, dx = \frac{a^x}{\ln a} + C$ ;  $a > 0, a \neq 1$
- $\int \tan x \, dx = \log |\sec x| + C$
- $\int \cot x \, dx = \log |\sin x| + C$
- $\int \sec x \, dx = \log |\sec x + \tan x| + C$
- $\int \operatorname{cosec} x \, dx = \log |\operatorname{cosec} x - \cot x| + C$

## INTEGRATION FORMULAE OF INVERSE TRIGONOMETRIC FUNCTIONS

- $\int \frac{1}{(1+x^2)} \, dx = \tan^{-1} x + C$
- $\int \frac{1}{x\sqrt{x^2-1}} \, dx = \sec^{-1} x + C$
- $\int \frac{1}{x\sqrt{x^2-1}} \, dx = -\operatorname{cosec}^{-1} x + C$
- $\int \frac{1}{\sqrt{1-x^2}} \, dx = \sin^{-1} x + C$
- $\int \frac{1}{\sqrt{1-x^2}} \, dx = -\cos^{-1} x + C$
- $\int \frac{1}{(1+x^2)} \, dx = \tan^{-1} x + C$

## DIFFICULT INTEGRAL FORMULAE

- $\int \sqrt{x^2 + a^2}.dx = 1/2.x.\sqrt{x^2 + a^2} + a^2/2 . \log|x + \sqrt{x^2 + a^2}| + C$
- $\int 1/(x^2 + a^2).dx = 1/a.\tan^{-1}x/a + C$
- $\int 1/\sqrt{x^2 - a^2}dx = \log|x + \sqrt{x^2 - a^2}| + C$
- $\int \sqrt{x^2 - a^2}.dx = 1/2.x.\sqrt{x^2 - a^2} - a^2/2 \log|x + \sqrt{x^2 - a^2}| + C$
- $\int 1/\sqrt{a^2 - x^2}.dx = \sin^{-1} x/a + C$
- $\int 1/(x^2 - a^2).dx = 1/2a.\log|(x - a)(x + a)| + C$
- $\int 1/(a^2 - x^2).dx = 1/2a.\log|(a + x)(a - x)| + C$
- $\int 1/\sqrt{x^2 + a^2 }.dx = \log|x + \sqrt{x^2 + a^2}| + C$
- $\int \sqrt{a^2 - x^2}.dx = 1/2.x.\sqrt{a^2 - x^2}.dx + a^2/2.\sin^{-1} x/a + C$