

Table of Indefinite Integrals

$$\int c f(x) dx = c \int f(x) dx \quad \int [f(x) + g(x)] dx = \int f(x) dx + \int g(x) dx$$

$$\int k dx = kx + C$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C \quad (n \neq -1) \quad \int \frac{1}{x} dx = \ln |x| + C$$

$$\int e^x dx = e^x + C \quad \int b^x dx = \frac{b^x}{\ln b} + C$$

$$\int \sin x dx = -\cos x + C \quad \int \cos x dx = \sin x + C$$

$$\int \sec^2 x dx = \tan x + C \quad \int \csc^2 x dx = -\cot x + C$$

$$\int \sec x \tan x dx = \sec x + C \quad \int \csc x \cot x dx = -\csc x + C$$

$$\int \frac{1}{x^2+1} dx = \tan^{-1} x + C \quad \int \frac{1}{\sqrt{1-x^2}} dx = \sin^{-1} x + C$$

1. For the following integrals, decide if you would use a u -substitution. If so, *just write down the u -substitution*. If not, *evaluate the integral*.

(a) $\int e^{\cos x} \sin x dx =$

(b) $\int \frac{dx}{ax+b} =$

(c) $\int_0^2 |2x-1| dx =$

(d) $\int_e^{e^4} \frac{dx}{x\sqrt{\ln x}} =$

(e) $\int (7x - 7^{-x}) dx =$

(f) $\int_0^1 x(\sqrt[3]{x} + \sqrt[4]{x}) dx =$

(g) $\int \pi dt =$

(h) $\int \frac{3 dr}{\sqrt{1-r^2}} =$

(i) $\int \tan^2 \theta \sec^2 \theta d\theta =$

(j) $\int \frac{dx}{(1+x^2)\tan^{-1}(x)} =$

2. Complete the u -substitution, or any other work, for the integrals from problem 1.

(a)

(b)

(c)

(d)

(e)

(f)

(g)

(h)

(i)

(j)