

$$\int R(\sin x, \cos x) \text{ ve } \int R(\sin^2 x, \cos^2 x)$$

$$\tan \frac{x}{2} = t$$

$$dx = \frac{2}{1+t^2} dt$$

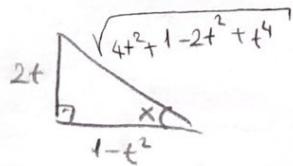
$$\sin x = \frac{2t}{1+t^2}$$

$$\cos x = \frac{1-t^2}{1+t^2}$$



$$\tan x = \frac{\frac{2 \tan \frac{x}{2}}{2}}{1 - \frac{\tan^2 \frac{x}{2}}{2}}$$

$$\tan x = \frac{2t}{1-t^2}$$

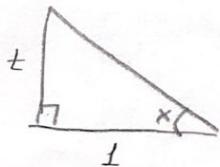


$$\tan x = t$$

$$dx = \frac{dt}{1+t^2}$$

$$\sin^2 x = \frac{t^2}{1+t^2}$$

$$\cos^2 x = \frac{1}{1+t^2}$$



Örnek

$$1) \int \frac{dx}{\sin^2 x \cos^4 x}$$

$$2) \int \frac{dx}{\cos x}$$

$$3) \int \frac{dx}{1 + \sin x - \cos x}$$

$$4) \int \frac{1+\sin x}{1+\cos x} dx$$

$$5) \int \frac{dx}{\sin^3 x}$$

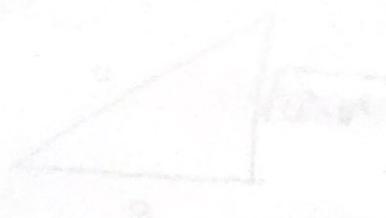
oder den Integraltausch ist hier
ausdrücklich gestattet

oder Punkt 1. Satz

ausdrücklich gestattet



rechteckige
Rechtecke
unterhalb
der Hypotenuse



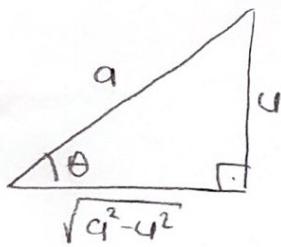
rechteckige
Rechtecke
oben
der Hypotenuse

Trigonometrik Dönüşümler

Radikal ifadeler içeren İntegralleri çözmek için trigonometrik dönüşümlerden yararlanınız.

$$\sqrt{a^2 - u^2}$$

$$u = a \sin \theta \text{ de.}$$

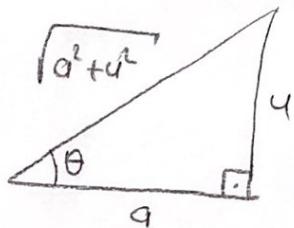


$$1 - \sin^2 \theta = \cos^2 \theta$$

özdeşliğini kullan.

$$\sqrt{a^2 + u^2}$$

$$u = a \tan \theta \text{ de.}$$

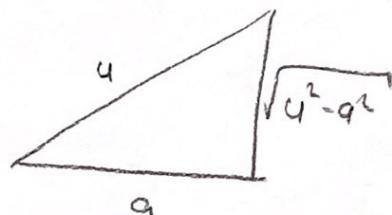


$$1 + \tan^2 \theta = \sec^2 \theta$$

özdeşliğini kullan.

$$\sqrt{u^2 - a^2}$$

$$u = a \sec \theta \text{ de.}$$



$$\sec^2 \theta - 1 = \tan^2 \theta$$

özdeşliğini kullan.

Örnekler

1) $\int \frac{dx}{x^2 \sqrt{9-x^2}}$

$$\textcircled{2} \quad \int \frac{\sqrt{9-x^2}}{x^2} dx$$

$$③ \int \frac{dx}{\sqrt{4x^2 + 1}}$$

$$\textcircled{4} \quad \int \frac{1}{x^2 \sqrt{x^2 + 4}} dx$$

$$\textcircled{5} \quad \int \frac{x}{\sqrt{x^2+4}} dx$$

$$\textcircled{6} \quad \int \frac{\sqrt{x^2-3}}{x} dx$$

⑦

$$\int \frac{dx}{\sqrt{x^2 - a^2}}$$

⑧ $\int \frac{x^3}{(4x^2+9)^{3/2}} dx$

⑨ $\int \frac{x}{\sqrt{3-2x-x^2}} dx$