

You may use the following formulas

$$\cos^2(x) + \sin^2(x) = 1$$

$$\cos(2x) = \cos^2(x) - \sin^2(x)$$

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

$$\tan^2(x) = \sec^2(x) - 1$$

$$\int x^n dx = \frac{1}{n+1}x^{n+1} + C, \quad n \neq -1$$

$$\int \sec^2 x dx = \tan x + C$$

$$\int \frac{1}{x} dx = \ln|x| + C$$

$$\int \sec x \tan x dx = \sec x + C$$

$$\int u dv = uv - \int v du$$

$$\int e^x dx = e^x + C$$

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

$$\int a^x dx = \frac{1}{\ln a} a^x + C$$

$$\int \frac{a}{a^2 - x^2} dx = \frac{1}{2} \ln \left| \frac{x+a}{x-a} \right| + C$$

$$\int \ln x dx = x \ln x - x + C$$

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

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

$$\int \frac{a}{x\sqrt{x^2 - a^2}} dx = \sec^{-1} \frac{x}{a} + C$$

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

$$\int \tan x dx = \ln|\sec x| + C \quad \int \frac{1}{\sqrt{x^2 - a^2}} dx = \ln(x + \sqrt{x^2 - a^2}) + C$$

$$\int \sec x dx = \ln|\sec x + \tan x| + C \quad \int \frac{1}{\sqrt{x^2 + a^2}} dx = \ln(x + \sqrt{x^2 + a^2}) + C$$