

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

$$\tan x = \frac{\sin x}{\cos x}$$

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

$$\sin 2x = 2 \sin x \cos x$$

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

$$= 1 - 2 \cos^2 x$$

$$= 2 \sin^2 x - 1$$

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

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

$$\sin^{-1} x = \arcsin x$$

$$\cos^{-1} x = \arccos x$$

$$\tan^{-1} x = \arctan x$$

$$\sinh x = \frac{e^x - e^{-x}}{2}$$

$$\cosh x = \frac{e^x + e^{-x}}{2}$$

$$\tanh x = \frac{e^x - e^{-x}}{e^x + e^{-x}}$$

$$\cosh^2 x - \sinh^2 x = 1$$

$$x = \sinh t$$

$$e^t - e^{-t} - 2x = 0$$

$$e^{2t} - 2e^t x - 1 = 0$$

$$e^t = x + \sqrt{1 + x^2} \quad (\because e^t > 0)$$

$$t = \log \left(x + \sqrt{1 + x^2} \right)$$

$$x = \cosh t$$

$$e^t + e^{-t} - 2x = 0$$

$$e^{2t} + 2e^t x - 1 = 0$$

$$e^t = -x \pm \sqrt{1 + x^2}$$

$$t = \log \left(-x \pm \sqrt{1 + x^2} \right)$$

$$y = a$$

$$y = x^r$$

$$y = \sqrt{x}$$

$$y = \frac{1}{x}$$

$$y = \sin x$$

$$y = \cos x$$

$$y = \tan x$$

$$y = e^x$$

$$y = \log x$$

$$y = a^x$$

$$y = f(g(x))$$

$$y = f(x)g(x)$$

$$y = \frac{f(x)}{g(x)}$$

$$y = x^x$$

$$y = \int_0^x f(t) \, dt$$

$$x^2 + y^2 = 1$$

$$x = f(y)$$

$$\begin{cases} x = f(t) \\ y = g(t) \end{cases}$$

$$\int x^r dx \ (r \neq -1)$$

$$\int \frac{1}{x} dx$$

$$\int e^x dx$$

$$\int \log x dx$$

$$\int \sin x dx$$

$$\int \cos x dx$$

$$\int \tan x dx$$

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

$$\int \frac{dx}{\sin^2 x}$$

$$\int a^x dx \ (a > 0, a \neq 1)$$

$$\frac{dy}{dx} = 0$$

$$\frac{dy}{dx} = rx^{r-1}$$

$$\frac{dy}{dx} = \frac{1}{2\sqrt{x}}$$

$$\frac{dy}{dx} = -\frac{1}{x^2}$$

$$\frac{dy}{dx} = \cos x$$

$$\frac{dy}{dx} = -\sin x$$

$$\frac{dy}{dx} = \frac{1}{\cos^2 x}$$

$$\frac{dy}{dx} = e^x$$

$$\frac{dy}{dx} = \frac{1}{x}$$

$$\frac{dy}{dx} = a^x \log a$$

$$\frac{dy}{dx} = f'(g(x)) \cdot g'(x)$$

$$\frac{dy}{dx} = f'(x)g(x) + f(x)g'(x)$$

$$\frac{dy}{dx} = \frac{f'(x)g(x) - f(x)g'(x)}{(g(x))^2}$$

$$\frac{dy}{dx} = x^x(1 + \log x)$$

$$\frac{dy}{dx} = f(x)$$

$$\frac{dy}{dx} = \frac{x}{y}$$

$$\frac{dy}{dx} = \frac{1}{\frac{df(y)}{dy}}$$

$$\frac{dy}{dx} = \frac{\frac{dy}{dt}}{\frac{dx}{dt}}$$

$$\begin{aligned}
\int x^r dx \ (r \neq -1) &= \frac{1}{r+1} x^{r+1} + C \\
\int \frac{1}{x} dx &= \log x + C \\
\int e^x dx &= e^x + C \\
\int \log x dx &= x \log x - x + C \\
\int \sin x dx &= -\cos x + C \\
\int \cos x dx &= \sin x + C \\
\int \tan x dx &= -\log|\cos x| + C \\
\int \frac{dx}{\cos^2 x} &= \tan x + C \\
\int \frac{dx}{\sin^2 x} &= -\frac{1}{\tan x} + C \\
\int a^x dx \ (a > 0, a \neq 1) &= \frac{a^x}{\log a} + C
\end{aligned}$$