$$
\begin{aligned}
\cos^2 x + \sin^2 x &= 1 \\
1 - \sin^2 x &= (1 + \sin x)(1 - \sin x) \\
&= \cos^2 x \\
1 - \cos^2 x &= (1 + \cos x)(1 - \cos x) \\
&= \sin^2 x \\
\tan x &= \frac{\sin x}{\cos x} \\
1 + \tan^2 x &= \frac{1}{\cos^2 x} \\
\tan^2 x &= \frac{1}{\cos^2 x} - 1 \\
\cos^2 x &= \frac{1}{1 + \tan^2 x} \\
\sin x &= 2 \sin \frac{x}{2} \cos \frac{x}{2} \\
\sin x \cos x &= \frac{1}{2} \sin 2x \\
\cos^2 x - \sin^2 x &= \cos 2x \\
&= (\cos x - \sin x)(\cos x + \sin x) \\
&= 1 - 2\cos^2 x \\
&= 2\sin^2 x - 1 \\
\sin^2 x &= \frac{1 - \cos 2x}{2} \\
\cos^2 x &= \frac{1 + \cos 2x}{2} \\
\sin^{-1} x &= \arcsin x \\
\cos^{-1} x &= \arccos x \\
\tan^{-1} x &= \arctan x \\
\sinh x &= \frac{e^x - e^{-x}}{2} \\
\cosh x &= \frac{e^x + e^{-x}}{2} \\
\tanh x &= \frac{e^x - e^{-x}}{e^x + e^{-x}} \\
\cosh^2 x - \sinh^2 x &= 1
\end{aligned}
$$

$$
\begin{aligned}
x &= \sinh t \\
e^t - e^{-t} - 2x &= 0 \\
e^{2t} - 2e^t x - 1 &= 0 \\
e^t &= x + \sqrt{1+x^2} \; (\because e^t > 0) \\
t &= \log\left(x + \sqrt{1+x^2}\right) \\
x &= \cosh t \\
e^t + e^{-t} - 2x &= 0 \\
e^{2t} + 2e^t x - 1 &= 0 \\
e^t &= -x \pm \sqrt{1+x^2} \\
t &= \log\left(-x \pm \sqrt{1+x^2}\right)
\end{aligned}
$$

$$
\begin{aligned}
y &= a \\
y &= x^r \\
y &= \sqrt{x} \\
y &= \frac{1}{x} \\
y &= \sin x \\
y &= \cos x \\
y &= \tan x \\
y &= e^x \\
y &= \log x \\
y &= a^x \\
y &= f(g(x)) \\
y &= f(x)g(x) \\
y &= \frac{f(x)}{g(x)} \\
y &= x^x \\
y &= \int_0^x f(t)\,dt \\
x^2 + y^2 &= 1 \\
x &= f(y)
\end{aligned}
$$

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

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

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

$$\int e^x \, dx$$

$$\int \log x \, dx$$

$$\int \sin x \, dx$$

$$\int \cos x \, dx$$

$$\int \tan x \, dx$$

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

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

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

$$\frac{dy}{dx} = 0$$
$$\frac{dy}{dx} = rx^{r-1}$$
$$\frac{dy}{dx} = \frac{1}{2\sqrt{x}}$$
$$\frac{dy}{dx} = -\frac{1}{x^2}$$
$$\frac{dy}{dx} = \cos x$$
$$\frac{dy}{dx} = -\sin x$$
$$\frac{dy}{dx} = \frac{1}{\cos^2 x}$$
$$\frac{dy}{dx} = e^x$$
$$\frac{dy}{dx} = \frac{1}{x}$$
$$\frac{dy}{dx} = a^x \log a$$
$$\frac{dy}{dx} = f'(g(x)) \cdot g'(x)$$
$$\frac{dy}{dx} = f'(x)g(x) + f(x)g'(x)$$
$$\frac{dy}{dx} = \frac{f'(x)g(x) - f(x)g'(x)}{\left(g(x)\right)^2}$$
$$\frac{dy}{dx} = x^x(1 + \log x)$$
$$\frac{dy}{dx} = f(x)$$
$$\frac{dy}{dx} = \frac{x}{y}$$
$$\frac{dy}{dx} = \frac{1}{f'(y)}$$
$$\frac{dy}{dx} = \frac{f'(t)}{g'(t)}$$

$$\int x^r \, dx \; (r \neq -1) = \frac{1}{r+1} x^{r+1} + C$$

$$\int \frac{1}{x} \, dx = \log x + C$$

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

$$\int \log x \, dx = x \log x - x + C$$

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

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

$$\int \tan x \, dx = -\log|\cos x| + C$$

$$\int \frac{dx}{\cos^2 x} = \tan x + C$$

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

$$\int a^x \, dx \; (a > 0, a \neq 1) = \frac{a^x}{\log a} + C$$