۲) $\int \frac{1}{x} dx = \ln|x| + C$

۱) $\int \frac{۲}{x} dx = ۲\int \frac{dx}{x} = ۲\ln|x| + C$

۲) $\int \frac{۱۰}{x} dx = ۱۰\int \frac{dx}{x} = ۱۰\ln|x| + C$

۳) $\int \sin ax\, dx = \frac{-۱}{a} \cos ax + C$

۱) $\int \sin x\, dx = -\cos x + C$

۲) $\int \sin ۲x\, dx = -\frac{۱}{۲} \cos ۲x + C$

۳) $\int \sin ۴x\, dx = -\frac{۱}{۴} \cos ۴x + C$

۴) $\int \sin(۱۰x)\, dx = -\frac{۱}{۱۰} \cos ۱۰x + C$

۴) $\int \cos ax\, dx = \frac{۱}{a} \sin ax + C$

۱) $\int \cos x\, dx = \sin x + C$

۲) $\int \cos ۲x\, dx = \frac{۱}{۲} \sin ۲x + C$

④ $\int \cos(10x)\,dx = \frac{1}{10}\sin 10x + C$

⑤ $\int \cos(7x)\,dx = \frac{1}{7}\sin 7x + C$

⑥ $\int \sec^2 x\,dx = \int (1+\tan^2 x)\,dx = \tan x + C$

⑦ $\int \csc^2 x\,dx = \int (1+\cot^2 x)\,dx = -\cot x + C$

⑧ $\int \tan x\,dx = -\ln|\cos x| + C = \ln|\sec x| + C$

⑨ $\int \cot x\,dx = \ln|\sin x| + C$

⑩ $\int (\sec x \cdot \tan x)\,dx = \sec x + C$

⑪ $\int (\csc x \cdot \cot x)\,dx = -\csc x + C$

(۱۱) $\int a^x dx = \frac{1}{\ln a} a^x + c$ $\quad a \neq 1, a > 0$

(۱۲) $\int e^x dx = e^x + c$ $\quad \left(\int e^{ax} dx = \frac{1}{a} e^{ax} + c\right)$

(۱۳) $\int \frac{1}{\sqrt{1-x^2}} dx = \sin^{-1} x + c$ $\quad \int \frac{1}{\sqrt{a^2-x^2}} dx = \sin^{-1} \frac{x}{a} + c$

(۱۴) $\int \frac{dx}{1+x^2} = \tan^{-1} x + c$ $\quad \int \frac{dx}{a^2+x^2} = \frac{1}{a} \tan^{-1} \frac{x}{a} + c$ $\quad a > 0$

مثال:

$$\int \left(x^2\sqrt{x} - \frac{2}{\sqrt{4-x^2}}\right) dx = \int \left(x^2 \cdot x^{\frac{1}{2}} - \frac{2}{\sqrt{4-x^2}}\right) dx = \int x^{\frac{5}{2}} dx - 2\int \frac{dx}{\sqrt{4-x^2}}$$

$$= \frac{x^{\frac{5}{2}+1}}{\frac{5}{2}+1} - 2\sin^{-1}\left(\frac{x}{2}\right) + c = \frac{2}{7}x^{\frac{7}{2}} - 2\sin^{-1}\left(\frac{x}{2}\right) + c$$

$$\int (2^x - 5\sin x + \frac{4}{4+x^2})\,dx = \int 2^x\,dx - 5\int \sin x\,dx + 4\int \frac{dx}{4+x^2}$$

$4 \to 2^2$

$$= \frac{2^x}{\ln 2} - 5(-\cos x) + 4\left(\frac{1}{2}\tan^{-1}\left(\frac{x}{2}\right)\right) + C = \frac{2^x}{\ln 2} + 5\cos x + 2\tan^{-1}\left(\frac{x}{2}\right) + C$$

$$\int \frac{4}{3+x^2}\,dx = 4\int \frac{dx}{3+x^2} = 4\int \frac{dx}{(\sqrt{3})^2 + x^2} = \frac{4\sqrt{3}}{3}\left(\tan^{-1}\frac{x}{\sqrt{3}}\right) + C$$

$$\int (2\csc^2 x - e^{4x} + 3^x)\,dx = -2\cot x - \frac{1}{4}e^{4x} + \frac{1}{\ln 3}3^x + C$$

$$\int (2\tan x - \sec^2 x)\,dx = -2\ln|\cos x| - \tan x + C$$

$$\int \left(\frac{2}{x^2+4} - \frac{1}{\sqrt{4-x^2}}\right)dx = 2\left(\frac{1}{2}\tan^{-1}\left(\frac{x}{2}\right)\right) - \sin^{-1}\frac{x}{2} + C$$

$$\int (e^{10x} + 10^x)\,dx = \frac{1}{10}e^{10x} + \frac{1}{\ln 10}10^x + C$$