$\int dx = x + c$

$\int k\,dx = kx + c \quad k \in \mathbb{R}$

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

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

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

$\int a^x dx = \frac{a^x}{\ln a} + c \quad a > 0,\ a \neq 1,\ a \in \mathbb{R}$

$\int \frac{dx}{\sqrt{a^2 - x^2}} = \arcsin x + c \quad a \neq 0,\ a \in \mathbb{R}$

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

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

$\int \frac{1}{\cos^2 x} dx = \operatorname{tg} x + c$

$\int \frac{1}{\sin^2 x} dx = -\operatorname{cotg} x + c$

$\int \frac{1}{a^2 + x^2} dx = \frac{1}{a} \operatorname{arctg} \frac{x}{a} + c \quad a \neq 0,\ a \in \mathbb{R}$

$\int \frac{1}{a^2 - x^2} = \frac{1}{2a} \ln\left|\frac{a+x}{a-x}\right| + c \quad a \neq 0,\ a \in \mathbb{R}$

$\int \frac{dx}{\sqrt{x^2 \pm a^2}} dx = \ln\left|x + \sqrt{x^2 \pm a^2}\right| + c$

$\int \frac{f'(x)}{f(x)} dx = \ln|f(x)| + c$

$c \in \mathbb{R}$

$(a \pm b)^2 = a^2 \pm 2ab + b^2$

$a^2 - b^2 = (a+b)(a-b)$

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

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

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

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

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

$\int \left(3x^2 + 2x - 4 + \frac{1}{3x^2} - \frac{2}{5x} + 4\sqrt{x^3} - \frac{3}{\sqrt[3]{x^2}}\right) dx =$

$\int x^n dx = \frac{x^{n+1}}{n+1} + c$

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

$\int 3x^2 dx + \int 2x\,dx - \int 4\,dx + \int \frac{1}{3x^2} dx - \int \frac{2}{5x} dx + \int 4\sqrt{x^3} dx - \int \frac{3}{\sqrt[3]{x^2}} dx =$

$= 3\int x^2 dx + 2\int x\,dx - 4\int 1\,dx + \frac{1}{3}\int \frac{1}{x^2} dx - \frac{2}{5}\int \frac{1}{x} dx + 4\int \sqrt{x^3} dx - 3\int \frac{1}{\sqrt[3]{x^2}} dx =$

$x^{n=2} \quad x^{n=1} \quad x^{n=0} \quad x^{-2} \quad x^{\frac{3}{2}} \quad \to x^{-\frac{2}{3}}$

$= \cancel{3} \frac{x^3}{\cancel{3}} + \cancel{2} \frac{x^2}{\cancel{2}} - 4x + \frac{1}{3} \frac{x^{-1}}{-1} - \frac{2}{5} \ln|x| + 4 \frac{x^{\frac{5}{2}}}{\frac{5}{2}} - 3 \frac{x^{\frac{1}{3}}}{\frac{1}{3}} + c =$

$= x^3 + x^2 - 4x - \frac{1}{3x} - \frac{2}{5} \ln|x| + \frac{8}{5} \sqrt{x^5} - 9\sqrt[3]{x} + c$

$\int \frac{(3^x + 4^x)^2}{12^x} dx = \int \frac{3^{2x} + 2 \cdot 3^x \cdot 4^x + 4^{2x}}{12^x} dx =$

$\int a^x dx = \frac{a^x}{\ln a} + c \quad a > 0\ a \neq 1\ a \in \mathbb{R}$

$(a+b)^2 = a^2 + 2ab + b^2$

$3^{2x} = 3^x \cdot 3^x$

$4^{2x} = 4^x \cdot 4^x$

$12^x = (3 \cdot 4)^x = 3^x \cdot 4^x$

$(a \cdot b)^r = a^r \cdot b^r$

$\left(\frac{a}{b}\right)^r = \frac{a^r}{b^r}$

$= \int \left(\frac{3^x \cdot \cancel{3^x}}{\cancel{3^x} \cdot 4^x} + \frac{2 \cdot \cancel{3^x} \cdot \cancel{4^x}}{\cancel{3^x} \cdot \cancel{4^x}} + \frac{4^x \cdot \cancel{4^x}}{3^x \cdot \cancel{4^x}}\right) dx =$

$\int \left(\frac{3}{4}\right)^x dx + \int 2\,dx + \int \left(\frac{4}{3}\right)^x dx =$

$\frac{\left(\frac{3}{4}\right)^x}{\ln\left(\frac{3}{4}\right)} + 2x + \frac{\left(\frac{4}{3}\right)^x}{\ln\left(\frac{4}{3}\right)} + c$

$\int \frac{\cos 2x}{\sin^2 2x} dx = \int \frac{\cos^2 x - \sin^2 x}{4\cos^2 x \sin^2 x} dx =$

$x \in \left(k\frac{\pi}{2}; (k+1)\frac{\pi}{2}\right)$

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

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

$\int \frac{1}{\cos^2 x} dx = \operatorname{tg} x + c$

$\int \frac{1}{\sin^2 x} dx = -\operatorname{cotg} x + c$

$= \int \left(\frac{\cancel{\cos^2 x}}{4\cancel{\cos^2 x} \sin^2 x} - \frac{\cancel{\sin^2 x}}{4\cos^2 x \cancel{\sin^2 x}}\right) dx =$

$= \frac{1}{4} \int \frac{1}{\sin^2 x} dx - \frac{1}{4} \int \frac{1}{\cos^2 x} dx = -\frac{1}{4} \operatorname{cotg} x - \frac{1}{4} \operatorname{tg} x + c$

$\int \frac{dx}{\sqrt{1-x^2} \cdot \arcsin x} = \int \frac{\frac{1}{\sqrt{1-x^2}}}{\arcsin x} dx = \ln|\arcsin x| + c$

$\to f'(x)$, $\to f(x)$

$\int \frac{f'(x)}{f(x)} dx = \ln|f(x)| + c$

$(\arcsin x)' = \frac{1}{\sqrt{1-x^2}}$

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

Inak:

$\int \frac{dx}{\sqrt{1-x^2}\,\arcsin x} = \left| \begin{array}{l} \arcsin x = t \\ \frac{1}{\sqrt{1-x^2}} dx = 1\,dt \end{array} \right| = \int \frac{1}{t} dt = \ln|t| + c = \ln|\arcsin x| + c$

$(\arcsin x)' = \frac{1}{\sqrt{1-x^2}} dx$

$(t)' = 1\,dt$

$\arcsin x = t$

$(\arcsin x)' = (t)'$

$\frac{1}{\sqrt{1-x^2}} dx = 1\,dt$

$\int \frac{x - 1 + 2 - 2}{\sqrt[3]{x+1}} dx = \int \frac{x+1-2}{\sqrt[3]{x+1}} dx = \int \left(\frac{x+1}{\sqrt[3]{x+1}} - \frac{2}{\sqrt[3]{x+1}}\right) dx =$

$\to$ PRIPOČÍTAM 0

$= \int (x+1)^{\frac{2}{3}} dx - 2\int (x+1)^{-\frac{1}{3}} dx = \left| \begin{array}{l} x+1 = t \\ (x+1)' = (t)' \\ 1\,dx = 1\,dt \end{array} \right| = \int t^{\frac{2}{3}} dt - 2\int t^{-\frac{1}{3}} dt$

$\int x^n dx = \frac{x^{n+1}}{n+1} + c$

$= \frac{t^{\frac{5}{3}}}{\frac{5}{3}} - 2\frac{t^{\frac{2}{3}}}{\frac{2}{3}} + c = \frac{3}{5}\sqrt[3]{(x+1)^5} - 3 \cdot \sqrt[3]{(x+1)^2} + c$