2. óra

$$\int f(ax+b)\,dx = \frac{F(ax+b)}{a} + c$$

$$\boxed{\int e^{1-x}\,dx = \frac{e^{-x+1}}{-1} + C \qquad \begin{array}{ll} a=-1 & ax+b=-y+1 \\ b=1 & f(y)=e^{y} \end{array}}$$

$$\int \frac{2}{(3x+4)^5}\,dx = 2\cdot\int (3x+4)^{-5}\,dx = \frac{2\cdot\frac{(3x+4)^{-4}}{-4}}{3} + C$$

$$F(y) = \frac{y^{-4}}{-4} \qquad f(y) = y^{-5}$$

$$ax+b = 3x+4$$

$$\int \frac{g'(x)}{g(x)}\,dx = \ln|g(x)|\,dx$$

$$\int \frac{3x^2+2}{x^3+2x+1}\,dx = \ln|x^2+2x+1| + C$$

$$\int \frac{x}{3x^2+2}\,dx = \frac{1}{6}\cdot\int \frac{6x}{3x^2+2}\,dx = \frac{1}{6}\cdot\ln|3x^2+2| + C$$

$$\left[3x^2+2\right]' = 6x$$

$$\int \operatorname{ctg}(2x-1)\,dx = \int \frac{\cos(2x-1)}{\sin(2x-1)}\,dx = \frac{1}{2}\cdot\int \frac{2\cdot\cos(2x-1)}{\sin(2x-1)}\,dx =$$

$$= \frac{1}{2}\ln|\sin(2x-1)| + C$$

$$\int \frac{x}{\sqrt{1-x^2}}\,dx = \int (1-x^2)^{-1/2} \cdot x\,dy = -\frac{1}{2}\int (1-x^2)^{-1/2} \cdot -2x\,dx$$

$$= -\frac{1}{2}\,\frac{(1-x^2)^{1/2}}{1/2} + C$$

$$\int x^2 \cdot (x^3+1)^6\,dx = 1/3 \cdot \int (x^3+1)^6 \cdot 3x^2\,dx =$$

$$= \frac{1}{3}\,\frac{(x^3+1)^7}{7} + C$$

$$\int \frac{e^{-x}}{e^{-x}-1}\,dx = -1\int \frac{-e^{-x}}{e^{-x}-1}\,dx = -\ln|e^{-x}-1| + c$$

$$\left[e^{-x}-1\right]' = \left[e^{-x}\right] = -e^{-x}$$

$$f(y) = e^{y} \quad f'(y) = e^{y}$$

$$g(x) = -x \quad g'(x) = -1$$

$$\int g^{n}(x)\cdot g'(x)\,dx = \frac{g^{n+1}(x)}{n+1} + C$$

$$\int \frac{e^{x}}{(e^{x}+2)^{3}}\,dx = \int (e^{x}+2)^{-3}\cdot e^{x} = \frac{(e^{x}+2)^{-2}}{-2} + C$$

$$\left[e^{x}+2\right]' = e^{x}$$

$$\int \frac{\sin x}{\cos^{2}x}\,dx = \int (\cos x)^{-2}\cdot \sin x\,dx = \int (\cos x)^{-2}\cdot -\sin x\,(-1) =$$

$$\left[\cos x\right]' = -\sin x$$

$$= -\int (\cos x)^{-2}\cdot -\sin x\,dx = -\frac{(\cos x)^{-1}}{-1} + C$$

$$\int \frac{x}{(x^{2}+1)^{2}}\,dx = \int (x^{2}+1)^{-2}\cdot x\,dx = \frac{1}{2}\int (x^{2}+1)^{-2}\cdot 2x\,dx =$$

$$\left[x^{2}+1\right]' = 2x$$

$$= \frac{1}{2}\,\frac{(x^{2}+1)^{-1}}{-1} + C$$