

$$2) \int \sin^4(x) \cos^5(x) dx \quad y = \sin(x) \quad y' = \cos(x) \\ dy = \cos(x) dx$$

$$\sin^4(x) \cdot \cos^4(x) \cdot \cos(x) = \sin^4(x) \cdot (1 - \sin^2(x))^2 \cdot \cos(x)$$

$$\int \sin^4(x) \cdot \cos^5(x) dx = \int \sin^4(x) \cdot (1 - \sin^2(x))^2 \cdot \cos(x) dx$$

~~sin^4(x) \cdot \cos^5(x)~~

$$= \int y^4 \cdot (1 - y^2)^2 dy = \int y^4 (1 - 2y^2 + y^4) dy$$

$$= \int y^4 - 2y^6 + y^8 dy = \frac{1}{5} y^5 - \frac{2}{7} y^7 + \frac{1}{9} y^9$$

$$\int \sin^4(x) \cdot \cos^5(x) dx = \frac{1}{5} \cdot \sin^5(x) - \frac{2}{7} \cdot \sin^7(x) + \frac{1}{9} \cdot \sin^9(x)$$

$$3) \int \frac{\log(x)+1}{x(\log(x)-1)} dx \quad y = \log(x) \quad y' = \frac{1}{x} \quad dy = \frac{1}{x} dx$$

$$\int \frac{\log(x)+1}{x(\log(x)-1)} dx = \int \frac{\log(x)+1}{\log(x)-1} \cdot \frac{1}{x} dx =$$

$$= \int \frac{y+1}{y-1} dy \quad (y-1)=t$$

$$\int \frac{y+1}{y-1} dy = \int \frac{t+2}{t} dt = \int \frac{t}{t} + \frac{2}{t} dt$$

$$= t + 2 \cdot \log(|t|)$$

$$\int \frac{y+1}{y-1} dy = y-1 + 2 \log(|y-1|) = y + 2 \cdot \log(|y-1|)$$

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

Odstranila jste absolutní hodnotu. To můžete udělat na intervalu (e, nekonečno).
Na intervalu (0, e) ne.