$$\int \frac{\cos x}{2+\sin x}\,dx = \int \frac{1}{2+\sin x}\cdot \cos x\,dx = \int \frac{1}{2+y}\,dy$$

Substituce

$y = \sin x$ "d"

$dy = \cos x\,dx$

$$= \ln|2+y| + c$$

$$= \ln|2+\sin x| + c$$

Věta:

$\varphi_{(x)} = \sin x \qquad f(y) = \dfrac{1}{2+y}$

$\varphi'_{(x)} = \cos x$

$$f(\varphi)\cdot\varphi' = \frac{1}{2+\sin x}\cdot\cos x$$

$$F = \ln|2+y|$$

$$\int \frac{\cos x}{2+\sin x}\,dx \overset{c}{=} \ln|2+\sin x|$$

$\varphi = \sin x \qquad D_\varphi = (\alpha,\beta) = (-\infty,\infty)$

$$\varphi((-\infty,\infty)) = [-1,1]$$

φ má dci na $(-\infty,\infty)$ ✓

$f = \dfrac{1}{2+y} \qquad F = \ln|2+y|$

$(-\infty, \cancel{-2}) \qquad (-2,\infty)$

$[-1,1] \subset (-2,\infty) \qquad (a,b)$

Per partes

$$\int u'v = uv - \int uv'$$

$$\int x \cos x \, dx = \sin x \cdot x - \int 1 \cdot \sin x \, dx$$

$v = x \qquad u' = \cos x \qquad = x \sin x - (-\cos x) + C$

$v' = 1 \qquad u = \sin x \qquad x \in \mathbb{R}$

$$\int gF = GF - \int Gf$$

$g = \cos x \qquad G = \sin x$

$F = x \qquad f = 1$ ✓

f, g spoj. ? na $\mathbb{R}$

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

$u' = 1 \qquad v = \operatorname{arctan} x \qquad = x \operatorname{arctan} x - \frac{1}{2} \ln(1+x^2) + C$

$u = x \qquad v' = \frac{1}{1+x^2}$

$y = 1 + x^2 \qquad \frac{1}{2} \int \frac{2x}{1+x^2} dx = \frac{1}{2} \int \frac{1}{y} dy$

$dy = 2x \, dx \qquad = \frac{1}{2} \ln |y| = \frac{1}{2} \ln (1+x^2)$

$-$ $\int \ln x, \quad \int \operatorname{arc},$

$$\boxed{\int e^{2x}\cos x\,dx} = e^{2x}\sin x - \int 2e^{2x}\sin x\,dx$$

$v = e^{2x}$ $\quad u' = \cos x$

$v' = 2e^{2x}$ $\quad u = \sin x$

$v = 2e^{2x}$ $\quad u' = \sin x$

$v' = 4e^{2x}$ $\quad u = -\cos x$

$$= e^{2x}\sin x - \left(2e^{2x}(-\cos x) - \int 4e^{2x}(-\cos x)\,dx\right.$$

$$= e^{2x}\sin x + 2e^{2x}\cos x - 4\boxed{\int e^{2x}\cos x\,dx}$$

$$5\int e^{2x}\cos x\,dx = e^{2x}\sin x + 2e^{2x}\cos x$$

$$\int e^{2x}\cos x\,dx = \frac{e^{2x}\sin x + 2e^{2x}\cos x}{5}$$