Substituce

$$\int \frac{\sin x}{3+\cos x}\,dx = -\int \frac{1}{3+\cos x}\cdot\boxed{(-\sin x)\,dx} = -\int \frac{1}{3+y}\,dy$$

$y = \cos x$ "1" "2"

$dy = \boxed{-\sin x\,dx}$

$$= -\ln|3+y| + c$$

$$= -\ln|3+\cos x| + c$$

(α, β)

$x \in (-\infty, \infty)$

$\varphi(x) = \cos x \qquad \varphi' = -\sin x \qquad \varphi((-\infty,\infty)) = [-1, 1]$

$f(y) = \frac{1}{3+y} \qquad F = \ln|3+y|$

$\cancel{(-\infty, -3)} \qquad (-3, \infty)$
$(a \quad b)$

$$f(\varphi)\cdot\varphi' = \frac{1}{3+\cos x}\cdot(-\sin x)$$

$[-1,1] \subset (-3, \infty)$

$\varphi((\alpha,\beta)) = [-1,1] \subset (-3,\infty)$
$= (a,b)$

$$\int \frac{1}{3+\cos}(-\sin x)\,dx \overset{c}{=} \ln|3+\cos x|$$

na $x \in (-\infty, \infty)$

$\cancel{\int \frac{1}{3+y}(-\sin x)\,dx} \qquad \cancel{\frac{dy}{-\sin x} = dx}$

$$\int \overset{g\ F}{u'v} = \overset{G\ F}{uv} - \int \overset{G\ f}{uv'}$$

$\frac{1}{2}x$

$(x \quad \ln(x+1))$

$$\int x \ln x \, dx = \frac{1}{2}x^2 \ln x - \int \frac{1}{2}x^2 \cdot \frac{1}{x} \, dx$$

$u' = x \qquad v = \ln x$

$$= \frac{1}{2}x^2 \ln x - \frac{x^2}{4} + c$$

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

$x \in (0, \infty)$

$g = x \qquad F = \ln x$

$G = \frac{1}{2}x^2 \qquad f = \frac{1}{x}$

g, f spoj. na $(0,\infty)$

$$\int 1 \cdot \arcsin x \, dx = x \arcsin x - \int \frac{x \, dx}{\sqrt{1-x^2}}$$

$u' = 1 \qquad v = \arcsin x$

$$= x\arcsin x - \left(-\sqrt{1-x^2}\right) + c$$

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

$x \in (-1, 1)$

$y^{1/2}$

$$\int -\frac{1}{2} \frac{-2x}{\sqrt{1-x^2}} \, dx = -\frac{1}{2}\int \frac{1}{\sqrt{y}} \, dy$$

$y = 1 - x^2$

$$= -\frac{1}{2} \frac{y^{1/2}}{1/2} + c = -\sqrt{y} + c$$

$dy = -2x \, dx$

$$= -\sqrt{1-x^2} + c$$

$1 \cdot \ln x,\ 4 x \arc,$

$$\boxed{\int e^x \cos(3x)\,dx} = e^x\cos(3x) + \int 3e^x \sin 3x\,dx$$

$u' = 3e^x \quad v = \sin 3x$

$u = 3e^x \quad v' = \cos 3x \cdot 3$

$u' = e^x \quad v = \cos(3x)$

$u = e^x \quad v' = -\sin(3x)\cdot 3$

$$= e^x\cos 3x + 3e^x \sin(3x) - 9\boxed{\int e^x \cos 3x\,dx}$$

$$10\int e^x\cos 3x\,dx = e^x\cos 3x + 3e^x\sin 3x + C$$

$$\int e^x\cos 3x\,dx = \frac{1}{10}\left(e^x\cos 3x + 3e^x\sin 3x\right) + C$$

$x\in\mathbb{R}$

$F' = f \quad x\in\mathbb{R}$

$$\int \overbrace{\frac{2x}{1+x^2}}^{f}\,dx = \overbrace{\ln(1+x^2)}^{F}$$

$x\in\mathbb{R}$ $\quad$ $x\in\mathbb{R}$.

$$(\ln(1+x^2))' = \frac{2x}{1+x^2}$$

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

$$\frac{1}{1-y^2}$$