$$\int x\sqrt[3]{1-x^2}\,dx = \left| \begin{matrix} 1-x^2 = t \\ -2x\,dx = dt \\ x\,dx = -\frac{1}{2}dt \end{matrix} \right| = \int \sqrt[3]{t}\left(-\frac{1}{2}\right)dt = -\frac{1}{2}\int t^{\frac{1}{3}}dt = \left| \int x^n dx = \frac{x^{n+1}}{n+1} + c \right|$$

$$= -\frac{1}{2}\,\frac{t^{\frac{4}{3}}}{\frac{4}{3}} + c = -\frac{1}{2}\cdot\frac{3}{4}(1-x^2)^{\frac{4}{3}} + c = -\frac{3}{8}\sqrt[3]{(1-x^2)^4} + c$$

$$\int \frac{e^{1-\ln^2 x}\cdot \ln x}{x}\,dx = \left| \begin{matrix} 1-\ln^2 x = t \\ -2\frac{\ln x}{x}dx = dt \end{matrix} \right| = \int e^t\left(-\frac{1}{2}\right)dt = -\frac{1}{2}\int e^t dt \quad \left| \int e^x dx = e^x + c \right.$$

$$\boxed{\frac{\ln x}{x}dx = -\frac{1}{2}dt}$$

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

$$\int \frac{\sin x}{\sqrt{\cos^2 x + 3}}\,dx = \left| \begin{matrix} \cos x = t \\ -\sin x\,dx = dt \\ \sin x\,dx = -dt \end{matrix} \right| = -\int \frac{1}{\sqrt{t^2+3}}dt = \left| \begin{matrix} \int \frac{1}{\sqrt{x^2 \pm a^2}}dx = \\ = \ln\left|x + \sqrt{x^2 \pm a^2}\right| + c \end{matrix} \right|$$

$a^2 = 3$

$$= -\ln\left|t + \sqrt{t^2+3}\right| + c = -\ln\left|\cos x + \sqrt{\cos^2 x + 3}\right| + c$$

$$\int \frac{\cos x}{\sin^2 x + 8\sin x + 26}\,dx = \left| \begin{matrix} \sin x = t \\ \cos x\,dx = dt \end{matrix} \right| = \int \frac{1}{t^2+8t+26}dt =$$

$t^2 + 8t + 26 = (\quad)(\quad)$

NEMÁ REÁLNE KORENE

$D = b^2 - 4ac$

$8^2 - 4\cdot 1\cdot 26 = 64 - 104 = -40$

$\sqrt{D} = \sqrt{-40} \notin R$

ÚPRAVA NA ŠTVOREC:

$\boxed{t^2 + 8t} + 26$

$(t+4)^2 + 10$

číslo

$(t+4)^2 = t^2 + 8t + 16$

$2\cdot t\cdot b = 8t$

$\boxed{a^2 \pm 2ab} + b^2$

$(a \pm b)^2$

$t \quad 4$

$$\left| \int \frac{1}{a^2+x^2}dx = \frac{1}{a}\operatorname{arctg}\frac{x}{a} + c \right|$$

$$= \int \frac{1}{(t+4)^2 + 10}dt = \left| \begin{matrix} t+4 = s \\ dt = ds \end{matrix} \right| = \int \frac{1}{s^2+10}ds = \frac{1}{\sqrt{10}}\operatorname{arctg}\frac{s}{\sqrt{10}} + c =$$

$10 = a^2$

$\sqrt{10} = a$

$$= \frac{1}{\sqrt{10}}\operatorname{arctg}\frac{t+4}{\sqrt{10}} + c = \frac{1}{\sqrt{10}}\operatorname{arctg}\frac{\sin x + 4}{\sqrt{10}} + c$$

$$\int \frac{dx}{\sqrt{8-6x-9x^2}} = \int \frac{dx}{\sqrt{9-(3x+1)^2}} = \left| \begin{matrix} 3x+1 = t \\ 3dx = dt \\ dx = \frac{1}{3}dt \end{matrix} \right| = * \quad \left| \begin{matrix} \int \frac{1}{\sqrt{a^2-x^2}}dx = \\ \arcsin\frac{x}{a} + c \end{matrix} \right|$$

$-9x^2 - 6x + 8 = -(\boxed{9x^2 + 6x} - 8)$

$-[(3x+1)^2 - 9]$

$\boxed{a^2 \pm 2ab} + b^2$

$(a \pm b)^2$

$3x \quad 1$

$2\cdot 3x\cdot b = 6x$

$(3x+1)^2 = 9x^2 + 6x + 1$

$$* = \int \frac{1}{\sqrt{9-t^2}}\cdot\frac{1}{3}dt = \frac{1}{3}\int \frac{1}{\sqrt{9-t^2}}dt = \frac{1}{3}\arcsin\frac{t}{3} + c =$$

$9 = a^2$

$3 = a$

$a = \sqrt{9}$

$$= \frac{1}{3}\arcsin\frac{3x+1}{3} + c = \frac{1}{3}\arcsin\left(x + \frac{1}{3}\right) + c$$

$$\int e^{\sqrt{x}}dx = \left| \begin{matrix} x = t^2 \\ dx = 2t\,dt \end{matrix} \right| = \int e^t\cdot 2t\,dt = 2\int t e^t dt = *$$

PER PARTES: $\boxed{\int u(x)\,v'(x)\,dx = u(x)v(x) - \int u'(x)\cdot v(x)\,dx}$

$u(x)$, $v'(x)$	$v'(x)$, $u(x)$
$P_n(x)\,e^x$	$P_n(x)\ln x$
$P_n(x)\,a^x$	$P_n(x)\arcsin x$
$P_n(x)\sin x$	$P_n(x)\arccos x$
$P_n(x)\cos x$	$P_n(x)\operatorname{arctg} x$
	$P_n(x)\operatorname{arccotg} x$

$$* = 2\int t e^t dt = \left| \begin{matrix} u = t & v' = e^t \\ u' = 1 & v = e^t \end{matrix} \right| = 2\left[t e^t - \int e^t dt\right] =$$

$$\boxed{\int e^x dx = e^x + c}$$

$$2(t\cdot e^t - e^t) + c = 2e^{\sqrt{x}}(\sqrt{x} - 1) + c$$

$x = t^2$

$t \to \sqrt{x}$

$$\int 1\cdot\arcsin x\,dx = \left| \begin{matrix} u = \arcsin x & v' = 1 \\ u' = \frac{1}{\sqrt{1-x^2}} & v = x \end{matrix} \right| =$$

$$= x\arcsin x - \int \frac{x}{\sqrt{1-x^2}}dx = x\arcsin x + \sqrt{1-x^2} + c \qquad c \in R$$

$$\int \frac{x}{\sqrt{1-x^2}}dx = \left| \begin{matrix} 1-x^2 = t \\ -2x\,dx = dt \\ x\,dx = -\frac{1}{2}dt \end{matrix} \right| = -\frac{1}{2}\int \frac{1}{\sqrt{t}}dt = -\frac{1}{2}\int t^{-\frac{1}{2}}dt =$$

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

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