(3) $y' \cos x + y \sin x = \cos x$.

$y' + y \tan(x) = 1 \Rightarrow y' + y \tan x = 0$

$\frac{dy}{dx} = -y \tan x \Rightarrow \int \frac{dy}{y} = -\int \tan x \, dx$

$\ln y = \ln(|\cos(x)|) + C_1$.

$\Rightarrow \boxed{y = C_1 \cos x}$

$y(x) = C_1(x) \cos x \Rightarrow y'(x) = C_1' \cos x - C_1 \sin x$

On remplace ds (1)

$[C_1' \cos x - C_1 \sin x] \cos x + C_1 \cos x \sin x = \cos x$

$C_1' \cos^2 x = \cos x \Rightarrow C_1' = \frac{1}{\cos x}$.

$\frac{dC_1}{dx} = \frac{1}{\cos x} \Rightarrow dC_1 = \int \frac{dx}{\cos x}$

On pose $u = \sin x$; $du = \cos x \, dx$; $dx = \frac{du}{\cos x}$

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

$= \int \frac{du}{1 - u^2} = \frac{1}{2} \ln \left| \frac{1+u}{1-u} \right|$

$C_1 = \frac{1}{2} \ln \left| \frac{1 + \sin x}{1 - \sin x} \right| + C$

donc $\boxed{y = \frac{1}{2} \cos x \ln \left| \frac{1 + \sin x}{1 - \sin x} \right| + C}$

(3)