3.10.2) $y'' - 2\tan x\, y' = 0 \quad y' = p, \quad y'' = p' \Rightarrow p' - 2\tan x p = 0 \Rightarrow \frac{dp}{dx} = 2\tan x p \Rightarrow \frac{dp}{p} = 2\tan x dx \Rightarrow \ln p = -2\ln\cos x + \ln c \Rightarrow p = \frac{c}{\cos^2 x}$

$\Rightarrow \frac{dy}{dx} = \frac{c}{\cos^2 x} \Rightarrow dy = \frac{c}{\cos^2 x}dx \Rightarrow y_h = c_1 \tan x + c_2, \quad y_1 = \tan x, \; y_2 = 1 \qquad w(x) = \begin{vmatrix} \tan x & 1 \\ 1+\tan^2 x & 0 \end{vmatrix} = -(1+\tan^2 x)$

$y_p = -y_1 \int \frac{y_2 b(x)}{W(x)} dx + y_2 \int \frac{y_1 b(x)}{W(x)} dx \Rightarrow y_p = -\tan x \int \frac{(1)(1)}{-(1+\tan^2 x)} dx + 1 \int \frac{\tan x(1)}{-(1+\tan^2 x)} dx \Rightarrow y_p = \tan x \int \cos^2 x\, dx - \int \frac{\tan x}{1+\tan^2 x} dx$

==============================

4.10.2) $y_1 = e^x, \; y_2 = e^{2x} \quad w(x) = \begin{vmatrix} e^x & e^{2x} \\ e^x & 2e^{2x} \end{vmatrix} = e^{3x} \; y_p = -e^x \int \frac{e^{2x}\sin(e^{x})}{e^{3x}} dx + e^{2x} \int \frac{e^x \sin(e^{x})}{e^{3x}} dx$