

$$(x^2 - 9)y' + xy = 0 \text{ [104 中原機械甲 1]}$$

$$\text{[解]原式} \Rightarrow y' + \frac{x}{x^2 - 9} y = 0$$

$$F = e^{\int \frac{x}{x^2 - 9} dx} = e^{\frac{1}{2} \int \frac{1}{x^2 - 9} d(x^2 - 9)} = e^{\frac{1}{2} \ln(x^2 - 9)} = \sqrt{x^2 - 9}$$

$$y = \frac{1}{F} (\int F \cdot 0 dx + C) = \frac{C}{\sqrt{x^2 - 9}}$$