

$$\Rightarrow \frac{1}{y^2 - 4} dy = x^2 dx$$

$$\Rightarrow \int \frac{1}{y^2 - 4} dy = \int x^2 dx$$

$$= \frac{1}{(y-2)(y+2)}$$

$$= \frac{A}{(y-2)} + \frac{B}{(y+2)}$$

$$= \frac{Ay + 2A + By - 2B}{y^2 - 4}$$

$$\Rightarrow 1 = (A+B)y + (2A - 2B)$$

$$\Rightarrow 1 = 2A + 2B + 2A - 2B$$

$$\Rightarrow A = \frac{1}{4}, \quad B = \frac{1}{4}$$

$$\int \frac{1}{y^2 - 4} dy = \int x^2 dx$$

$$\int \left( \frac{1/4}{(y-2)} - \frac{1/4}{(y+2)} \right) dy = \int x^2 dx$$

$$\frac{1}{4} [ \text{Ln}(y-2) - \text{Ln}(y+2) ] = \frac{x^3}{3} + c$$

$$\Rightarrow \frac{1}{4} \text{Ln} \frac{y-2}{y+2} = \frac{x^3}{3} + c$$

مثال (3) حل المعادلات التفاضلية التالية :

$$(a) \quad y' = \frac{e^{x-y}}{1+e^x}$$

الحل :