Solve

$$\frac{dy}{dx} + \frac{1}{x}y = xy^2$$

$\frac{y}{x} \cdot \frac{1}{xy^2}$

$\frac{1}{x^2y}$

Dividing each term by xy^2

x^{-2+1}

$$\frac{1}{xy^2}\frac{dy}{dx} + \frac{1}{x^2y} = 1$$

$$\frac{1}{xy^2}dy + \frac{1}{x^2y}dx = dx$$

$$\int \frac{1}{xy^2}dy \text{ or } \int \frac{1}{x^2y}dx = \int dx.$$

$$\frac{-1}{xy} = x + C$$

You can make y the subject.