2b)

$y = \frac{x^2}{3} + \frac{C}{x}$; $xy' + y = x^2$

$y' = \frac{2x}{3} - \frac{C}{x^2}$

$xy' + y = x^2$ Substitute for y and y'

$x\left(\frac{2x}{3} - \frac{C}{x^2}\right) + \left(\frac{x^2}{3} + \frac{C}{x}\right) = x^2$

$\frac{2x^2}{3} - \frac{Cx}{x^2} + \frac{x^2}{3} + \frac{C}{x} = x^2$

$\frac{3x^2}{3} - \frac{C}{x} + \frac{C}{x} = x^2$

$x^2 = x^2$