

$$(11) \quad xy' + y = x^3$$

Hom:  $xy' + y = 0$   $\left[ y_H = Ae^{-\int \frac{1}{x} dx} = Ae^{-\ln x} = Ae^{\ln(x^{-1})} = \frac{A}{x} \right]$

Sol partre: MVC  $y_p = \frac{A(x)}{x}$   $y_p' = \frac{A'(x)x - A(x)}{x^2}$

$$xy_p' + y_p = A'(x) - \frac{Ax}{x^2} + \frac{Ax}{x} = x^3 \Rightarrow A'(x) = \frac{x^4}{3} \Rightarrow y_p = \frac{x^3}{3}$$

Sol de l'eq complete:  $y = \frac{A}{x} + \frac{x^3}{3}$  ou  $A \in \mathbb{R}$