

## 6.2 part 2 Separable Differential Equations

Solve: (Find all possible solutions  $\rightarrow$  general solution)

1)  $y' = x^3$

2)  $y' = \frac{6x^2}{2y + \cos y}$

3)  $\frac{dy}{dx} = x^2y$

4)  $\frac{dy}{dx} = 1 + y - 2x - 2xy$

$$5) \frac{dy}{dx} = \frac{3x^2}{e^{2y}} \quad y(0) = \frac{1}{2}$$

$$6) \frac{dy}{dx} = \frac{1}{x} \quad y(-1) = 2$$

Always check, when given an initial position or a point, that the explicit solution

1. doesn't contradict the original differential equation
2. its derivative exists for all values of the domain

$$7) \frac{dy}{dx} = \frac{1}{3}y^{-2} \quad y(1) = 1$$