

**Question 1 [5]**

- (i) For the first order, ordinary differential equation, solve for  $y(x)$ , subject to  $y(x = 0) = y_0$ , a constant:

$$\alpha y + \beta \frac{dy}{dx} = 0,$$

where,  $\alpha$  and  $\beta$  are constants.

- (ii) Briefly discuss the role that the parameters  $\alpha$  and  $\beta$  play in controlling the resulting function.

- (iii) Sketch your solution to (i).