



## EXERCISE ONE

This slope field with two equilibrium solutions corresponds to one of the following differential equation:

- ①  $y' = 1 - y^2 + x^2$ ;
- ②  $y' = (y - 1)(1 - y)(1 + x^3)$ ;
- ③  $y' = xy^2 - x + y^2 - 1$ .

Which one is it? Consider the particular solution of this equation with initial value  $y(0) = 0$ ; use the slope field to determine whether  $y(1) > 0$  or  $y(1) < 0$ . Please justify your answers.