

# Ordinary Differential Equation

Quiz 1 (B2 & B3)

27th January 2023

1. Solve:  $xy^2y' = x^3 + y^3$
2. Show that any solution of the equation

$$e^{x^3}y'' + (x^3 - 3x)y' + (\sin x \cos x)y = e^x$$

is infinitely differentiable.

3. Prove that  $y'' + Py' + Qy = 0$  has 2 linearly independent solutions.
4. Find all possible bounded solution of  $y'' + Py' + Qy = 0$  such that  $y', y''$  are also solutions.