Differential Equations
MAP2302
Test 1 practice

Answer FOUR questions and show all work.

1. Solve the IVP:
\[ \frac{dy}{dx} = \frac{x-1}{e^{x+y}}; \quad y(0) = 1. \]

2. Solve the DE:
\[ x \frac{dy}{dx} = 2x + 3y. \]

3. Solve the DE:
\[ (x + y) \, dx + (x - y) \, dy = 0. \]

4. Solve the DE:
\[ (x^2 - 3y^2) \, dx + 2xy \, dy = 0. \]

5. Solve the DE:
\[ \frac{dy}{dx} + 2y = y^2. \]