Worksheet 2/18/2025

1. Solve the differential equation $xy' = (y^2 + 1)(x^2 + 1)$ with the initial condition $y(1) = 1$.

2. Solve the differential equation $x^2y' + xy = 1$ with the initial condition $y(1) = 2$.

3. Solve the differential equation $y'' + y' = x$ with initial conditions $y(0) = 0,\ y'(0) = 1$.