Math 202 Quiz 1

Sr. Num.: ID. Num.: Name:

Q A: Consider the first order ordinary differential equation:

$$dy + 2xy^2 dx = 0.$$

(1) (3 points) Find all possible solutions of the above differential equation.

(2)
- Use part (1) to find the solution that satisfies the initial condition $y(0) = -1$. (1 point)

- Graph the solution on its interval of definition. (1 points)

- Use the existence and uniqueness theorem to show that the IVP has a unique solution. (2 points)

Q B: (3 points) Use the separation method to find the general solution of the ordinary differential equation:

$$ye^x \frac{dy}{dx} = e^{-y} + e^{-2x-y}.$$