

**MAT 239 (Differential Equations) Prof. Swift**  
**Worksheet 5. First Order ODEs, Inspection and Separation of Variables**

1. Find the general solution to  $\frac{dy}{dx} = 2y$ , by inspection if possible.
2. Solve the initial value problem (IVP)  $\frac{dy}{dx} = 2y$ ,  $y(0) = 3$ , by inspection if possible.
3. Find the solution to the IVP  $\frac{dy}{dx} = \frac{1}{e^y}$ ,  $y(0) = 0$ , using separation of variables.  
Find the interval of existence of the solution.