

**MAT 239 (Differential Equations), Prof. Swift**  
**Worksheet 4 on Separation of Variables**

1. Find the general solution to the ODE  $y' = 2xy^2$ .

This is not, technically, the *general* solution because the solution  $y = \text{---}$  is missing.

2. Using the general solution you just found, solve the IVP

$$y' = 2xy^2, \quad y(0) = 1.$$

After finding the particular solution, sketch the solution and fill in the blanks.  
The interval of existence of this particular solution is  $\text{---} < x < \text{---}$ .