

NAME: .....

Georgia Tech, Fall 2015  
Math 2552 (Sections F1 – F4, L1 – L4)

**Quiz 13**

1. Solve the non-linear equation for a function  $y(x)$ :

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

(An implicit solution is fine.)

2. Solve the equation for a function  $y(x)$ :

$$y^2 y'' = y'.$$

Hint: Use the substitution  $u = y'$  and use the Chain Rule to write  $\frac{du}{dx} = \frac{du}{dy} u$ .

Careful with the constants: There are *three* distinct families of solutions to this equation!