Math 2260 Quiz 3 February 6, 2007

Name: Solutions (20 points total)

1. (20 points) Solve the initial value problem $\frac{dy}{dx} = \frac{1}{x^2y^2}$, $y(2) = 0$.

① $y^2 dy = \frac{1}{x^2} dx$

$\int y^2 dy = \int x^{-2} dx$

$\frac{y^3}{3} = \frac{x^{-1}}{-1} + C$

② Solve for y

$y^3 = \frac{-3}{x} + C$

$y = \sqrt[3]{\frac{-3}{x} + C}$

③ Use $y(2) = 0$ to find C

$(0) = \sqrt[3]{\frac{-3}{(2)} + C} \Rightarrow C = \frac{3}{2}$

$\therefore \boxed{y = \sqrt[3]{\frac{-3}{x} + \frac{3}{2}}}$