Quiz 2 20 points Math 220 Name: _____

1. (5 points) Use a substitution to find an explicit solution for $y' - x^2 y = xe^{-x^3} y^4$ if $y(0) = 1$.

2. (5 points) Is the following equation exact? How do you know? Find an implicit general solution for $xy\cos(x)\,dx + (x\sin(x) + \cos(x))\,dy = 0$.

3. (a) (5 points) Find the solution for $y'' + 2y' + 2y = 0$ if $y(\pi) = 2$ and $y'(\pi) = 3$.

(b) (2 points) Write the general solution to a third order homogeneous linear differential equation with characteristic roots $4, 4, 2$.

4. (3 points) Use the Wronskian to show that $f(x) = 1$ and $g(x) = \cos(x)$ are independent functions, but cannot be solutions to the same second order homogeneous linear differential equation.