Math 1B 207 DIS Quiz 6

11 Apr 2019

Name: _____ Score: _____

1. (a) Sketch the direction field for the differential equation $y' = y^2 - 1$. (2 points)
   (b) Sketch the solution curves passing through $(0, 0)$ and $(1, 1)$ respectively. (2 points)
   (c) Can a solution to the differential equation $y' = y^2 - 1$ tend to -1 as $x \to \infty$? Explain your answer using the direction field in part a. (2 points)

2. Let $f(x) = e^x, g(x) = xe^x$.

   (a) Verify that $f(x)$ and $g(x)$ are both solutions to the differential equation $y'' - 2y' + y = 0$. (4 points)

   (b) * Show that for any real numbers a, b, $af(x) + bg(x)$ is also a solution to the differential equation $y'' - 2y' + y = 0$. (Bonus 1 point)