Math 10B with Professor Stankova
Quiz 14; Tuesday, 5/1/2018
Section #211; Time: 11 AM
GSI name: Roy Zhao **Name:** _____

Circle True or False. (1 point for correct answer, 0 for incorrect answer)

1. True False Changing the initial conditions for a linear homogeneous recurrence relation does not affect the bases of the exponential functions that appear the direct formula for the relation.
2. True False Checking that a function $y(t)$ is a solution to a DE may not be possible since we may not know how to solve the DE.
3. True False There are IVP's in which the function $f(t, y)$ is continuous everywhere, but the solutions to the IVP cannot extend beyond a certain interval $[0, T)$.
4. True False All I.V.P.'s for second order, linear, homogeneous ODE's with constant coefficients are solvable and have a unique solution.
5. True False The DE $y' = 3y^2$ will have a slope field with same slopes lined up in vertical lines because the equation is autonomous.
6. True False The dot product of vectors always yields a non-negative result, but it is the norm of a vector that gives its length.
7. True False Two vectors (of same dimensions) are perpendicular if and only if their dot product is 1.
8. True False There are non-square matrices A and B for which it is possible to multiply them in either order but then AB cannot equal BA.
9. True False As soon as we see a row like $(000\ldots0|0)$ during Gaussian elimination, we know that the system will have infinitely many solutions.
10. True False If an eigenvector $\vec{v}$ for a matrix A corresponds to eigenvalue $\lambda = 2018$, then $A^{2019}(\vec{v}) = 2019^{2018}$
11. True False The least-square best-fitting line for any number of data points always exists and is unique essentially because there is a (unique) shortest distance from a point to a plane in any dimensions.
12. True False If we use more data points to find the best-fiting line, we may increase the overall error S yet still be able to make better predictions about the data.