

Mathematics 1350H – Linear algebra I: matrix algebra

TRENT UNIVERSITY, Summer 2017

Assignment #3

Solutions to systems are easy to find?

or

This could have been a quiz question ... :-)

Due on Wednesday, 31 May, 2017.

Consider the system of equations

$$\begin{array}{rccccrcr} x & + & y & + & z & - & 5w & = & 9 \\ x & - & y & + & 7z & - & w & = & 1 \\ x & - & 2y & + & 10z & + & w & = & -3 \\ & & y & - & 3z & - & rw & = & 2r \end{array}$$

where the r that appears in the fourth equation is some unknown real number. (The first three equations also appear in the system of equations in Quiz #4.)

1. Determine for which values, if any, of r the given system of equations has no solutions, a single solution, or many solutions, respectively. If there are solutions, determine what they are. [10]