

Drill Quiz Number 2 for Chapter 10 Section 1

For each system of equations below, write the system as an augmented matrix and use Gauss-Jordan elimination to determine whether or not the system has a solution. Use the notation in the text (for example $4R_1 + (-2)R_2 \rightarrow R_2$) to label your steps.

Use your own paper. Organize your work so that it is easy to read.

$$\begin{array}{rcl} 1. & x & -y & +13z & = & 5 \\ & 2x & +y & -4z & = & 1 \\ & x & & +3z & = & 2 \end{array}$$

$$\begin{array}{rcl} 2. & 2x & -4y & +12z & = & 3 \\ & x & & +z & = & 0 \\ & & -4y & +10z & = & 3 \end{array}$$

Answers:

#1. Solutions are of the form $(x, y, z) = (2-3z, -3+10z, z)$, where z is any real number. An example of a particular solution is $(2, -3, 0)$, which is another way of writing $x = 2, y = -3, z = 0$ (obtained by plugging in $z = 0$). Another example of a particular solution is $(-1, 7, 1)$ (obtained by plugging in $z = 1$).

#2. Solutions are of the form $(x, y, z) = (-z, -3/4+(5/2)z, z)$, where z is any real number. An example of a particular solution is $(0, -3/4, 0)$ (obtained by plugging in $z = 0$). Another example of a particular solution is $(-4, 37/4, 4)$ (obtained by plugging in $z = 4$).