Quiz 4

Матн-1150-ез32

Solve each system of equations completely. (Show at least enough work that I can tell which method you're using.)

$$\begin{array}{l}
2x+y=1\\
4x+2y=3
\end{array}$$

I'll solve this one by elimination; I multiply the first equation by -2 and then add them both together:

$$-4x - 2y = -2,$$

+
$$4x + 2y = 3;$$

0 = 1.

This statement is false, so there is **no solution**.

$$\begin{array}{l}
x - 2y + 3z = 7 \\
2x + y + z = 4 \\
-3x + 2y - 2z = -10
\end{array}$$

I'll solve this one by substitution, first solving the first equation for x:

$$x - 2y + 3z = 7;$$

$$x = 2y - 3z + 7.$$

This gives me a new system in 2 dimensions:

$$\begin{cases} 2(2y - 3z + 7) + y + z = 4, \\ -3(2y - 3z + 7) + 2y - 2z = -10; \\ & \begin{cases} 5y - 5z = -10, \\ -4y + 7z = 11. \end{cases}$$

I'll also solve this by substitution, solving the first equation for y:

$$5y - 5z = -10;$$

$$y = z - 2.$$

Now I can solve for z:

$$-4(z-2) + 7z = 11;$$

 $z = 1.$

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This gives me the other results:

$$y = (1) - 2 = -1;$$

 $x = 2(-1) - 3(1) + 7 = 2.$

(x, y, z) = (2, -1, 1).

Therefore,