The question may ask:
- for the solution to all three variables,
- for the solution to one variable, or
- if a number is not a solution.

What is the solution for the system of equations below?

$$x + y + z = 2$$
$$x - 2y - z = -4$$
$$x - 9y + z = -18$$

(1) $(-2,2,2)$ (3) $(0,2,0)$

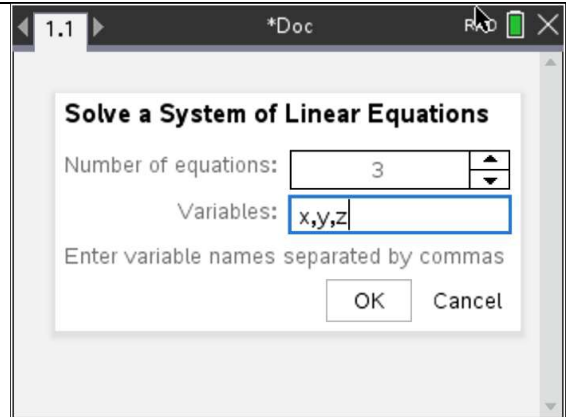(2) $(-2,-2,6)$ (4) $(0,2,4)$

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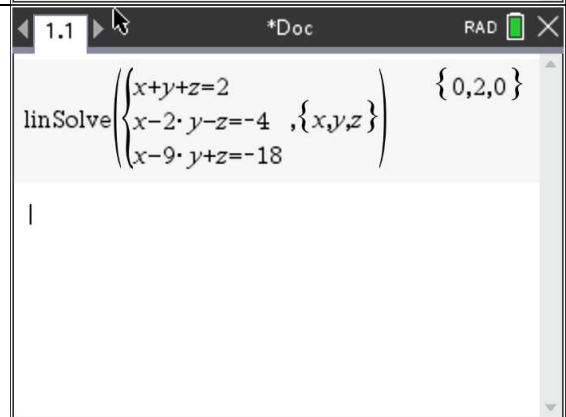
Add a Calculator page.

Menu: 3, 2 brings up this wizard.

Change the Number of equations to 3.

Click in the Variables box to add or change the variable(s).

1.1 ▶	*Doc	RAD 🔲 ✕

Solve a System of Linear Equations

Number of equations: 3

Variables: x,y,z

Enter variable names separated by commas

OK   Cancel

Enter the equations as provided in the question.

(3) is the correct response.

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$$\text{linSolve}\left(\begin{cases} x+y+z=2 \\ x-2\cdot y-z=-4 \\ x-9\cdot y+z=-18 \end{cases}, \{x,y,z\}\right) \qquad \{0,2,0\}$$
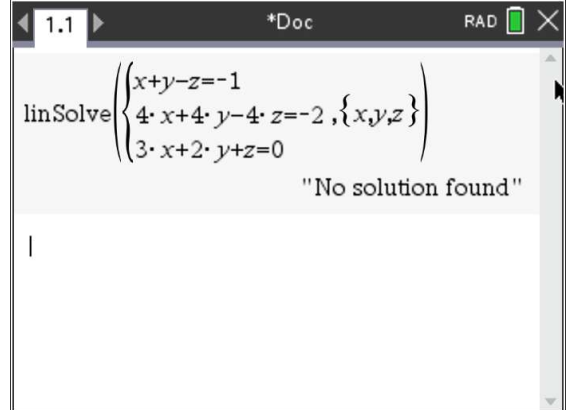
If this were an open ended question, algebraic work similar to this is required for full credit:

$$x+y+z=2 \quad x-2y-z=-4$$
$$\underline{x-2y-z=-4} \quad \underline{x-9y+z=-18}$$
$$2x-y=-2 \quad 2x-11y=-22$$

$$2x-y=-2$$
$$\underline{2x-11y=-22}$$
$$10y=20$$
$$y=2$$

$$x+2+z=2$$
$$x-2(2)-z=-4$$

$$x+z=0$$
$$\underline{x-z=0}$$
$$2x=0$$
$$x=0$$

$$0+2+z=2$$
$$z=0$$
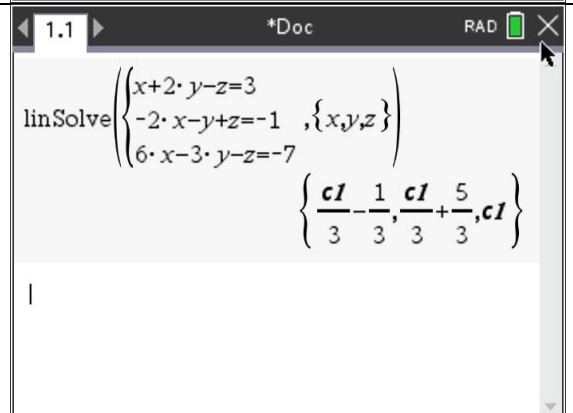
Every Regents question has had a unique solution. If there is no solution, this appears.	◀ 1.1 ▶ *Doc RAD ⬛ ✕ $\text{linSolve}\begin{pmatrix}\begin{cases}x+y-z=-1\\4\cdot x+4\cdot y-4\cdot z=-2\\3\cdot x+2\cdot y+z=0\end{cases},\{x,y,z\}\end{pmatrix}$ "No solution found" |
If there is an infinite number of solutions, this appears. Since any real value can be substituted for the variable c_1, there is an infinite number of solutions.	◀ 1.1 ▶ *Doc RAD ⬛ ✕ $\text{linSolve}\begin{pmatrix}\begin{cases}x+2\cdot y-z=3\\-2\cdot x-y+z=-1\\6\cdot x-3\cdot y-z=-7\end{cases},\{x,y,z\}\end{pmatrix}$ $\left\{\dfrac{c_1}{3}-\dfrac{1}{3},\dfrac{c_1}{3}+\dfrac{5}{3},c_1\right\}$ |