Three-variable systems: eliminate, solve and check — Further practice

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Further practice 11

Solve the system. Show elimination and check every original equation.

$$\begin{cases} (1)x + (1)y + (1)z = 7 \\ (1)x + (-1)y + (0)z = 2 \\ (0)x + (1)y + (-1)z = 1 \end{cases}$$

Further practice 12

Solve the system. Show elimination and check every original equation.

$$\begin{cases} (1)x + (1)y + (1)z = 3 \\ (2)x + (-1)y + (0)z = 0 \\ (0)x + (1)y + (-1)z = \frac{-1}{2} \end{cases}$$

Further practice 13

Solve the system. Show elimination and check every original equation.

$$\begin{cases} (2)x + (1)y + (-1)z = 1 \\ (1)x + (-1)y + (1)z = 2 \\ (1)x + (1)y + (1)z = 6 \end{cases}$$

Further practice 14

Solve the system. Show elimination and check every original equation.

$$\begin{cases} (1)x + (-2)y + (0)z = 0 \\ (0)x + (1)y + (-2)z = 0 \\ (1)x + (1)y + (1)z = 21 \end{cases}$$

Extension 15

Three ticket types cost 2,3,5 dollars. Their counts are x,y,z. Nine tickets cost 33 dollars, and the first two types total 5 tickets. Form and solve a three-variable system; check integer counts.

Extension 16

Do three written equations always determine three unique values? Describe the real solutions of this system.

$$\begin{cases} (1)x + (1)y + (1)z = 6 \\ (2)x + (2)y + (2)z = 12 \\ (1)x + (-1)y + (0)z = 0 \end{cases}$$