線形代数１，第２回演習問題

$\boxed{1}$ 次の連立１次方程式 $(A\mathbf{x} = \mathbf{b})$ を拡大係数行列 $(\tilde{A} = (A|\mathbf{b}))$ を用いて表せ.

(1) $\begin{cases} 3x + 5y & = -1 \\ 2x - 7y & = 4 \end{cases}$
(2) $\begin{cases} 3x - 2z & = 1 \\ y - 2z & = 5 \\ x - y & = 8 \end{cases}$

$\boxed{2}$ 次の連立１次方程式を掃き出し法で解け.

(1) $\begin{cases} x + 2y & = -4 \\ 2x + 3y & = -5 \end{cases}$
(2) $\begin{cases} x - 2y & = 26 \\ x - 3y & = 35 \end{cases}$
(3) $\begin{cases} 2x - 3y & = -50 \\ 3x - 4y & = -69 \end{cases}$

(4) $\begin{cases} x + z & = 4 \\ -2x - y + z & = -1 \\ 2x + y & = 4 \end{cases}$
(5) $\begin{cases} x + 2y + 3z & = 9 \\ 3x + y + z & = -2 \\ -3x + y + 2z & = 13 \end{cases}$
(6) $\begin{cases} 3x + 2y + z & = 15 \\ 4x + y + 2z & = 14 \\ 5x + 2y + 2z & = 21 \end{cases}$

(7) $\begin{cases} x + w & = 5 \\ y + z & = 5 \\ x + y + z & = 6 \\ x + z + w & = 8 \end{cases}$
(8) $\begin{cases} x + 3y + 2z + 2w & = 1 \\ 2x + y + 2z + w & = 0 \\ x + 2y + z + w & = 2 \\ x + 2y + 2z + 2w & = -1 \end{cases}$

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[0]解答：

$\boxed{1}$ (1) $\tilde{A} = \begin{pmatrix} 3 & 5 & | & -1 \\ 2 & -7 & | & 4 \end{pmatrix}$
(2) $\tilde{A} = \begin{pmatrix} 3 & 0 & -2 & | & 1 \\ 0 & 1 & -2 & | & 5 \\ 1 & -1 & 0 & | & 8 \end{pmatrix}$

$\boxed{2}$ (1) $x = 2, y = -3$ (2) $x = 8, y = -9$ (3) $x = -7, y = 12$ (4) $x = 1, y = 2, z = 3$ (5) $x = -2, y = 1, z = 3$ (6) $x = 5, y = 2, z = -4$ (7) $x = 1, y = 2, z = 3, w = 4$ (8) $x = 1, y = 2, z = -1, w = -2$