

14.08.2022

$$1) \quad 7 \times \begin{bmatrix} 5 & 10 \\ 7 & 12 \\ 11,3 & 5 \\ 25 & 30 \end{bmatrix} + 2 \times \begin{bmatrix} 5 & 10 \\ 7 & 12 \\ 11,3 & 5 \\ 25 & 30 \end{bmatrix} =$$

$$= \begin{bmatrix} 35 & 70 \\ 49 & 84 \\ 79,1 & 35 \\ 77,5 & 210 \end{bmatrix} + \begin{bmatrix} 10 & 20 \\ 14 & 24 \\ 22,6 & 10 \\ 50 & 60 \end{bmatrix} = \begin{bmatrix} 45 & 90 \\ 63 & 108 \\ 101,7 & 45 \\ 225 & 270 \end{bmatrix}$$

$$2) \quad 3x - 2y + 5z = 7$$

$$7x + 4y - 8z = 3$$

$$5x - 3y - 4z = -12$$

$$\begin{array}{ccc|ccc|ccc|ccc} 3 & -2 & 5 & 7 & :3 & 1 & -\frac{2}{3} & \frac{5}{3} & \frac{7}{3} & - & - & - & - \\ 7 & 4 & -8 & 3 & \rightarrow & 7 & 4 & -8 & 3 & \rightarrow & 0 & \frac{26}{3} & -\frac{53}{3} \\ 5 & -3 & -4 & -12 & \rightarrow & 5 & -3 & -4 & -12 & \rightarrow & 0 & \frac{1}{3} & \frac{54}{3} \end{array} \rightarrow \begin{array}{ccc|ccc|ccc|ccc} 1 & -\frac{2}{3} & \frac{5}{3} & \frac{7}{3} & \cdot \frac{3}{3} & 1 & -\frac{2}{3} & \frac{5}{3} & \frac{7}{3} & - & - & - & - \\ 0 & \frac{26}{3} & -\frac{53}{3} & -\frac{40}{3} & \cdot \frac{3}{26} & 0 & 1 & -\frac{59}{26} & -\frac{40}{26} & - & - & - & - \\ 0 & \frac{1}{3} & \frac{54}{3} & -\frac{41}{3} & \cdot \frac{3}{1} & 0 & \frac{1}{3} & \frac{54}{3} & -\frac{41}{3} & - & - & - & - \end{array}$$

$$\rightarrow \begin{array}{ccc|ccc|ccc|ccc} 1 & -\frac{2}{3} & \frac{5}{3} & \frac{7}{3} & \cdot \frac{3}{3} & 1 & 0 & \frac{12}{78} & \frac{102}{78} & - & - & - & - \\ 0 & 1 & -\frac{59}{26} & -\frac{40}{26} & \cdot \frac{2}{3} & 0 & 1 & -\frac{59}{26} & -\frac{40}{26} & - & - & - & - \\ 0 & \frac{1}{3} & \frac{54}{3} & -\frac{41}{3} & \cdot \frac{1}{3} & 0 & 0 & \frac{903}{78} & \frac{1806}{78} & - & - & - & - \end{array} \rightarrow \begin{array}{ccc|ccc|ccc|ccc} 1 & 0 & \frac{12}{78} & \frac{102}{78} & - & - & - & - & - & - & - & - \\ 0 & 1 & -\frac{59}{26} & -\frac{40}{26} & - & - & - & - & - & - & - & - \\ 0 & 0 & 1 & 2 & \cdot \frac{59}{26} & 0 & 0 & 1 & 2 & - & - & - & - \end{array}$$

$$\rightarrow \begin{array}{ccc|ccc|ccc|ccc} 1 & 0 & \frac{12}{78} & \frac{102}{78} & \cdot \frac{78}{12} & 1 & 0 & 1 & \frac{102}{12} & - & - & - & - \\ 0 & 1 & -\frac{59}{26} & -\frac{40}{26} & \cdot \frac{26}{-59} & 0 & 1 & 0 & \frac{-40}{-59} & - & - & - & - \\ 0 & 0 & 1 & 2 & \cdot \frac{59}{26} & 0 & 0 & 1 & 2 & - & - & - & - \end{array} \rightarrow \begin{array}{ccc|ccc|ccc|ccc} 100 & 1 & & & & & & & & & & & \\ 010 & 3 & & & & & & & & & & & \\ 001 & 2 & & & & & & & & & & & \end{array} \quad \begin{array}{l} x=1 \\ y=3 \\ z=2 \end{array}$$

$$3) \begin{cases} x^2 + yx - 9 = 0 \\ x - \frac{y}{5} = 0 \end{cases}$$



$$\begin{cases} x^2 + yx - 9 = 0 \\ x = \frac{y}{5} \end{cases}$$

$$\left(\frac{y}{5}\right)^2 + y \cdot \frac{y}{5} - 9 = 0$$

$$\frac{y}{5} \left( \frac{y}{5} + y \right) = 9$$

$$\frac{y^2}{5} = \frac{6y}{5}$$

$$6y^2 = 225$$

$$y = \pm \sqrt{37,5}$$

$$x = \frac{\pm \sqrt{37,5}}{5}$$

$$4) \begin{cases} x \cdot y = 48 \\ 2(x+y) = 28 \end{cases} \rightarrow \begin{cases} x = \frac{48}{y} \\ x+y = 14 \end{cases} \rightarrow \begin{cases} x = \frac{48}{y} \\ \frac{48}{y} + y = 14 \end{cases} \rightarrow \begin{cases} x = \frac{48}{y} \\ \frac{48+y^2}{y} = 14 \end{cases}$$

$$48 + y^2 = 14y$$

$$y^2 - 14y + 48 = 0$$

$$\Delta = (-14)^2 - 4 \cdot 48 = 4$$

$$y_1 = 8, y_2 = 6$$

$$x_1 = 6, x_2 = 8$$