計算例：p.95 練習 5(1)

$$\left(\begin{array}{cc|cc} 1 & 2 & 1 & 0 \\ 3 & 7 & 0 & 1 \end{array}\right) \xrightarrow[\text{②}+\text{①}\times(-3)]{\rightarrow} \left(\begin{array}{cc|cc} 1 & 2 & 1 & 0 \\ 0 & 1 & -3 & 1 \end{array}\right)$$

$$\xrightarrow[\text{①}+\text{②}\times(-2)]{\rightarrow} \left(\begin{array}{cc|cc} 1 & 0 & 7 & -2 \\ 0 & 1 & -3 & 1 \end{array}\right)$$

よって逆行列は，$\left(\begin{array}{cc} 7 & -2 \\ -3 & 1 \end{array}\right)$

計算例：p.95 練習 5(2)

$$\left(\begin{array}{cc|cc} 3 & -8 & 1 & 0 \\ 2 & -5 & 0 & 1 \end{array}\right) \xrightarrow[\text{②}+\text{①}\times(-\frac{2}{3})]{\rightarrow} \left(\begin{array}{cc|cc} 3 & -8 & 1 & 0 \\ 0 & 1/3 & -2/3 & 1 \end{array}\right)$$

$$\xrightarrow[\text{②}\times(3)]{\rightarrow} \left(\begin{array}{cc|cc} 3 & -8 & 1 & 0 \\ 0 & 1 & -2 & 3 \end{array}\right) \xrightarrow[\text{①}+\text{②}\times(8)]{\rightarrow} \left(\begin{array}{cc|cc} 3 & 0 & -15 & 24 \\ 0 & 1 & -2 & 3 \end{array}\right)$$

$$\xrightarrow[\text{①}\div(3)]{\rightarrow} \left(\begin{array}{cc|cc} 1 & 0 & -5 & 8 \\ 0 & 1 & -2 & 3 \end{array}\right)$$

よって逆行列は，$\left(\begin{array}{cc} -5 & 8 \\ -2 & 3 \end{array}\right)$

計算例：p.95 練習 5(3)

$$\left(\begin{array}{cc|cc} 1 & 2 & 1 & 0 \\ 3 & 4 & 0 & 1 \end{array}\right) \xrightarrow[\text{②}+\text{①}\times(-3)]{\rightarrow} \left(\begin{array}{cc|cc} 1 & 2 & 1 & 0 \\ 0 & -2 & -3 & 1 \end{array}\right)$$

$$\xrightarrow[\text{①}+\text{②}]{\rightarrow} \left(\begin{array}{cc|cc} 1 & 0 & -2 & 1 \\ 0 & -2 & -3 & 1 \end{array}\right) \xrightarrow[\text{②}\div(-2)]{\rightarrow} \left(\begin{array}{cc|cc} 1 & 0 & -2 & 1 \\ 0 & 1 & 3/2 & -1/2 \end{array}\right)$$

よって逆行列は，$\left(\begin{array}{cc} -2 & 1 \\ \dfrac{3}{2} & -\dfrac{1}{2} \end{array}\right)$

計算例：p.95 練習 6(1)

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 0 & 1 & 0 & 0 \\ 0 & 1 & 1 & 0 & 1 & 0 \\ 0 & 2 & 1 & 0 & 0 & 1 \end{array}\right)$$

↓ ①+②×(−2)
　②+②×(−2)

$$\downarrow \quad \begin{array}{l} ①+②×(−2) \\ ③+②×(−2) \end{array}$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & -2 & 1 & -2 & 0 \\ 0 & 1 & 1 & 0 & 1 & 0 \\ 0 & 0 & -1 & 0 & -2 & 1 \end{array}\right)$$

$$\downarrow \quad ③×(−1)$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & -2 & 1 & -2 & 0 \\ 0 & 1 & 1 & 0 & 1 & 0 \\ 0 & 0 & 1 & 0 & 2 & -1 \end{array}\right)$$

$$\downarrow \quad \begin{array}{l} ①+③×(2) \\ ②+③×(−1) \end{array}$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 0 & 1 & 2 & -2 \\ 0 & 1 & 0 & 0 & -1 & 1 \\ 0 & 0 & 1 & 0 & 2 & -1 \end{array}\right)$$

よって逆行列は, $\left(\begin{array}{ccc} 1 & 2 & -2 \\ 0 & -1 & 1 \\ 0 & 2 & -1 \end{array}\right)$

計算例：p.95 練習 6(2)

$$\left(\begin{array}{ccc|ccc} 1 & 1 & 0 & 1 & 0 & 0 \\ 2 & 0 & -1 & 0 & 1 & 0 \\ 1 & 2 & 1 & 0 & 0 & 1 \end{array}\right)$$

$$\downarrow \quad ②+③$$

$$\left(\begin{array}{ccc|ccc} 1 & 1 & 0 & 1 & 0 & 0 \\ 3 & 2 & 0 & 0 & 1 & 1 \\ 1 & 2 & 1 & 0 & 0 & 1 \end{array}\right)$$

$$\downarrow \quad \begin{array}{l} ②+①×(−3) \\ ③+①×(−1) \end{array}$$

$$\left(\begin{array}{ccc|ccc} 1 & 1 & 0 & 1 & 0 & 0 \\ 0 & -1 & 0 & -3 & 1 & 1 \\ 0 & 1 & 1 & -1 & 0 & 1 \end{array}\right)$$

$$\downarrow \quad ②×(−1)$$

$$\left(\begin{array}{ccc|ccc} 1 & 1 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 3 & -1 & -1 \\ 0 & 1 & 1 & -1 & 0 & 1 \end{array}\right)$$

$$\downarrow \quad \begin{array}{l} ①+②×(−1) \\ ③+②×(−1) \end{array}$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 0 & -2 & 1 & 1 \\ 0 & 1 & 0 & 3 & -1 & -1 \\ 0 & 0 & 1 & -4 & 1 & 2 \end{array}\right)$$

よって逆行列は, $\left(\begin{array}{ccc} -2 & 1 & 1 \\ 3 & -1 & -1 \\ -4 & 1 & 2 \end{array}\right)$

計算例：p.95 練習6(3)

$$\left(\begin{array}{ccc|ccc} 1 & 3 & 1 & 1 & 0 & 0 \\ 2 & 5 & 4 & 0 & 1 & 0 \\ 3 & 6 & 8 & 0 & 0 & 1 \end{array}\right)$$

$\downarrow$ ② + ① × (−2)
　② + ① × (−3)

$$\left(\begin{array}{ccc|ccc} 1 & 3 & 1 & 1 & 0 & 0 \\ 0 & -1 & 2 & -2 & 1 & 0 \\ 0 & -3 & 5 & -3 & 0 & 1 \end{array}\right)$$

$\downarrow$ ① + ② × (3)
　③ + ② × (−3)

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 7 & -5 & 3 & 0 \\ 0 & -1 & 2 & -2 & 1 & 0 \\ 0 & 0 & -1 & 3 & -3 & 1 \end{array}\right)$$

$\downarrow$ ② × (−1)
　③ × (−1)

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 7 & -5 & 3 & 0 \\ 0 & 1 & -2 & 2 & -1 & 0 \\ 0 & 0 & 1 & -3 & 3 & -1 \end{array}\right)$$

$\downarrow$ ① + ③ × (−7)
　② + ③ × (2)

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 0 & 16 & -18 & 7 \\ 0 & 1 & 0 & -4 & 5 & -2 \\ 0 & 0 & 1 & -3 & 3 & -1 \end{array}\right)$$

よって逆行列は, $\left(\begin{array}{ccc} 16 & -18 & 7 \\ -4 & 5 & -2 \\ -3 & 3 & -1 \end{array}\right)$

計算例：p.95 練習 7(1)

$$\left(\begin{array}{cccc|cccc} 1 & 1 & 2 & 1 & 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 2 & 0 & 1 & 0 & 0 \\ 0 & 1 & 2 & 2 & 0 & 0 & 1 & 0 \\ 1 & 2 & 1 & 2 & 0 & 0 & 0 & 1 \end{array}\right)$$

↓ ④ + ① × (−1)

$$\left(\begin{array}{cccc|cccc} 1 & 1 & 2 & 1 & 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 2 & 0 & 1 & 0 & 0 \\ 0 & 1 & 2 & 2 & 0 & 0 & 1 & 0 \\ 0 & 1 & -1 & 1 & -1 & 0 & 0 & 1 \end{array}\right)$$

↓ ① + ② × (−1)
　 ③ + ② × (−1)
　 ④ + ② × (−1)

$$\left(\begin{array}{cccc|cccc} 1 & 0 & 1 & -1 & 1 & -1 & 0 & 0 \\ 0 & 1 & 1 & 2 & 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & -1 & 1 & 0 \\ 0 & 0 & -2 & -1 & -1 & -1 & 0 & 1 \end{array}\right)$$

↓ ① + ③ × (−1)
　 ② + ③ × (−1)
　 ④ + ③ × (2)

$$\left(\begin{array}{cccc|cccc} 1 & 0 & 0 & -1 & 1 & 0 & -1 & 0 \\ 0 & 1 & 0 & 2 & 0 & 2 & -1 & 0 \\ 0 & 0 & 1 & 0 & 0 & -1 & 1 & 0 \\ 0 & 0 & 0 & -1 & -1 & -3 & 2 & 1 \end{array}\right)$$

↓ ④ × (−1)

$$\left(\begin{array}{cccc|cccc} 1 & 0 & 0 & -1 & 1 & 0 & -1 & 0 \\ 0 & 1 & 0 & 2 & 0 & 2 & -1 & 0 \\ 0 & 0 & 1 & 0 & 0 & -1 & 1 & 0 \\ 0 & 0 & 0 & 1 & 1 & 3 & -2 & -1 \end{array}\right)$$

↓ ① + ④
　 ② + ④ × (−2)

$$\left(\begin{array}{cccc|cccc} 1 & 0 & 0 & 0 & 2 & 3 & -3 & -1 \\ 0 & 1 & 0 & 0 & -2 & -4 & 3 & 2 \\ 0 & 0 & 1 & 0 & 0 & -1 & 1 & 0 \\ 0 & 0 & 0 & 1 & 1 & 3 & -2 & -1 \end{array}\right)$$

よって逆行列は，
$$\left(\begin{array}{cccc} 2 & 3 & -3 & -1 \\ -2 & -4 & 3 & 2 \\ 0 & -1 & 1 & 0 \\ 1 & 3 & -2 & -1 \end{array}\right)$$

計算例：p.95 練習 7(2)

$$\left(\begin{array}{cccc|cccc} 0 & 0 & 1 & 0 & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & -1 & 0 & 1 & 0 & 0 \\ -1 & 1 & -1 & 1 & 0 & 0 & 1 & 0 \\ 0 & -1 & 0 & 1 & 0 & 0 & 0 & 1 \end{array}\right)$$

↓ ③ + ①

$$\left(\begin{array}{cccc|cccc} 0 & 0 & 1 & 0 & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & -1 & 0 & 1 & 0 & 0 \\ -1 & 1 & 0 & 1 & 1 & 0 & 1 & 0 \\ 0 & -1 & 0 & 1 & 0 & 0 & 0 & 1 \end{array}\right)$$

↓ ③ + ②

$$\left(\begin{array}{cccc|cccc} 0 & 0 & 1 & 0 & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & -1 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 1 & 1 & 0 \\ 0 & -1 & 0 & 1 & 0 & 0 & 0 & 1 \end{array}\right)$$

↓ ④ + ③

$$\left(\begin{array}{cccc|cccc} 0 & 0 & 1 & 0 & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & -1 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 & 1 & 1 & 1 & 1 \end{array}\right)$$

↓ ② + ④

$$\left(\begin{array}{cccc|cccc} 0 & 0 & 1 & 0 & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 & 1 & 2 & 1 & 1 \\ 0 & 1 & 0 & 0 & 1 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 & 1 & 1 & 1 & 1 \end{array}\right)$$

↓ ②を 1 行目
　③を 2 行目
　①を 3 行目

$$\left(\begin{array}{cccc|cccc} 1 & 0 & 0 & 0 & 1 & 2 & 1 & 1 \\ 0 & 1 & 0 & 0 & 1 & 1 & 1 & 0 \\ 0 & 0 & 1 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 1 & 1 & 1 & 1 \end{array}\right)$$

よって逆行列は，$\left(\begin{array}{cccc} 1 & 2 & 1 & 1 \\ 1 & 1 & 1 & 0 \\ 1 & 0 & 0 & 0 \\ 1 & 1 & 1 & 1 \end{array}\right)$