

12月15日小テスト 解答

①

$$\left( \begin{array}{ccc|ccc} 3 & 6 & -5 & 1 & 0 & 0 \\ 1 & 2 & -2 & 0 & 1 & 0 \\ -2 & -3 & 2 & 0 & 0 & 1 \end{array} \right) \xrightarrow{1r \leftrightarrow 2r} \left( \begin{array}{ccc|ccc} 1 & 2 & -2 & 0 & 1 & 0 \\ 3 & 6 & -5 & 1 & 0 & 0 \\ -2 & -3 & 2 & 0 & 0 & 1 \end{array} \right)$$

$$2r + = 1r \times (-3)$$

$$3r + = 1r \times 2$$

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

$$\xrightarrow{1r + = 2r \times (-2)} \left( \begin{array}{ccc|ccc} 1 & 0 & 2 & 0 & -3 & -2 \\ 0 & 1 & -2 & 0 & 2 & 1 \\ 0 & 0 & 1 & 1 & -3 & 0 \end{array} \right)$$

$$\begin{array}{r} 1 \ 2 \ -2 \ 0 \ 1 \ 0 \\ -) \ 0 \ 2 \ -4 \ 0 \ 4 \ 2 \\ \hline 1 \ 0 \ 2 \ 0 \ -3 \ -2 \\ -) \ 0 \ 0 \ 2 \ 2 \ -6 \ 0 \\ \hline 1 \ 0 \ 0 \ 2 \ 3 \ -2 \end{array}$$

$$\begin{array}{r} 0 \ 1 \ -2 \ 0 \ 2 \ 1 \\ +) \ 0 \ 0 \ 1 \ 2 \ -6 \ 0 \\ \hline 0 \ 1 \ 0 \ 2 \ -4 \ 1 \end{array}$$

$$\downarrow$$

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

②

$$\begin{vmatrix} 1 & x & x \\ x & 1 & x \\ x & x & 1 \end{vmatrix} = \begin{vmatrix} 1 & x & x \\ 0 & 1-x^2 & x-x^2 \\ 0 & x-x^2 & 1-x^2 \end{vmatrix}$$

$$= \begin{vmatrix} (1-x)(1+x)x(1-x) & \\ x(1-x)(1-x)(1+x) & \end{vmatrix} = (1-x)^2 \begin{vmatrix} 1+x & x \\ x & 1+x \end{vmatrix}$$

$$= (x-1)^2 (2x+1)$$

(R119  $\frac{1}{2}$  +  $\frac{5}{12}$ )

$$\left( \begin{array}{ccc|ccc} 3 & 6 & -5 & 1 & 0 & 0 \\ 1 & 2 & -2 & 0 & 1 & 0 \\ -2 & -3 & 2 & 0 & 0 & 1 \end{array} \right) \xrightarrow{1r+3r} \left( \begin{array}{ccc|ccc} 1 & 3 & -3 & 1 & 0 & 1 \\ 1 & 2 & -2 & 0 & 1 & 0 \\ -2 & -3 & 2 & 0 & 0 & 1 \end{array} \right)$$

$$\downarrow \begin{array}{l} 2r+ = 1r \times (-1) \\ 3r+ = 1r \times 2 \end{array}$$

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

$$\downarrow \begin{array}{l} 3r+ = 2r \times (-3) \\ 1r+ = 2r \times (-3) \end{array}$$

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

$$\downarrow 2r+ = 3r$$

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