

1 次の行列式を計算せよ. (ただし (3) の答えは, 1 次式の積に分解した形で答えよ.) (各 1 点)

$$(1) \begin{vmatrix} 2 & 0 & 0 \\ \pi & 5 & 0 \\ \sqrt{2014} & 6/17 & 17 \end{vmatrix} = 2 \times 5 \times 17 = 170$$

$$(2) \begin{vmatrix} 2 & 0 & 2 & 0 \\ -1 & 0 & 0 & 1 \\ 0 & 2 & 1 & 0 \\ 0 & -1 & 0 & 2 \end{vmatrix} = 2 \begin{vmatrix} 1 & 0 & 1 & 0 \\ -1 & 0 & 0 & 1 \\ 0 & 2 & 1 & 0 \\ 0 & -1 & 0 & 2 \end{vmatrix} \xrightarrow{\textcircled{2}+\textcircled{1}} 2 \begin{vmatrix} 1 & 0 & 1 & 0 \\ 0 & 0 & 1 & 1 \\ 0 & 2 & 1 & 0 \\ 0 & -1 & 0 & 2 \end{vmatrix} = 2 \begin{vmatrix} 0 & 1 & 1 \\ 2 & 1 & 0 \\ -1 & 0 & 2 \end{vmatrix} \\ = 2(-1^2 \times (-1) - 1 \times 2^2) = 2 \times (-3) = -6$$

$$(3) \begin{vmatrix} a & a & a & a \\ a & b & b & b \\ a & b & c & c \\ a & b & c & d \end{vmatrix} \xrightarrow{\textcircled{4}-\textcircled{3}} \begin{vmatrix} a & a & a & a \\ a & b & b & b \\ a & b & c & c \\ 0 & 0 & 0 & d-c \end{vmatrix} \xrightarrow{\textcircled{3}-\textcircled{2}} \begin{vmatrix} a & a & a & a \\ a & b & b & b \\ 0 & 0 & c-b & c-b \\ 0 & 0 & 0 & d-c \end{vmatrix} \\ \xrightarrow{\textcircled{2}-\textcircled{1}} \begin{vmatrix} a & a & a & a \\ 0 & b-a & b-a & b-a \\ 0 & 0 & c-b & c-b \\ 0 & 0 & 0 & d-c \end{vmatrix} = a(b-a)(c-b)(d-c)$$