$$\begin{vmatrix} 1 & 2 & 3 \\ 8 & 9 & 4 \\ 7 & 6 & 5 \end{vmatrix} = 1\begin{vmatrix} 9 & 4 \\ 6 & 5 \end{vmatrix} - 2\begin{vmatrix} 8 & 4 \\ 7 & 5 \end{vmatrix} + 3\begin{vmatrix} 8 & 9 \\ 7 & 6 \end{vmatrix}$$

$$= 21 - 2 \times 12 + 3(-15) = -48$$

$$\begin{vmatrix} 1+n & 2+n & 3+n \\ 8+n & 9+n & 4+n \\ 7+n & 6+n & 5+n \end{vmatrix} \xrightarrow{-4} = \begin{vmatrix} 1+n & 2+n & 3+n \\ 7 & 7 & 1 \\ 6 & 4 & 2 \end{vmatrix} = \begin{vmatrix} 1 & 2 & 3+\frac{6}{7}n \\ 7 & 7 & 1 \\ 6 & 4 & 2 \end{vmatrix}$$

$$\begin{vmatrix} 1 & 2 & 3+\frac{6}{7}n \\ 0 & -7 & -20-6n \\ 0 & -8 & -16-\frac{36}{7}n \end{vmatrix} = \begin{vmatrix} 1 & 2 & 3+\frac{6}{7}n \\ 0 & -7 & -20-6n \\ 0 & 0 & \frac{48}{7}+\frac{12}{7}n \end{vmatrix}$$

$$\det = 1 \times (-7)\left(\frac{48}{7}+\frac{12}{7}n\right) = -48 - 12n$$

$$\begin{vmatrix} x^1 & x^2 & x^3 \\ x^8 & x^9 & x^4 \\ x^7 & x^6 & x^5 \end{vmatrix} = (x)(x^4)(x^5)\begin{vmatrix} 1 & x & x^2 \\ x^4 & x^5 & 1 \\ x^2 & x & 1 \end{vmatrix} =$$

$$1\begin{vmatrix} x^5 & 1 \\ x & 1 \end{vmatrix} - x\begin{vmatrix} x^4 & 1 \\ x^2 & 1 \end{vmatrix} + x^2\begin{vmatrix} x^4 & x^5 \\ x^2 & x \end{vmatrix} = x^5 - x^5 - x^3 + x^7 + x^9 - x^5 =$$

$$x^{10}\left(-x+x^3+x^7-x^9\right)$$