$$\begin{bmatrix} 1 & 2 & 3 \\ 8 & 9 & 4 \\ 7 & 6 & 5 \end{bmatrix} \rightarrow \begin{bmatrix} 1 & 2 & 3 \\ 0 & -7 & -20 \\ 0 & -8 & -16 \end{bmatrix} \rightarrow \begin{bmatrix} 1 & 2 & 3 \\ 0 & -7 & -20 \\ 0 & 0 & \frac{48}{7} \end{bmatrix}$$

$$\det A = 1 \times -7 \times \frac{48}{7} = \boxed{-48}$$

$$\begin{bmatrix} 1+x & 2+x & 3+x \\ 8+x & 9+x & 4+x \\ 7+x & 6+x & 5+x \end{bmatrix} \longrightarrow \begin{bmatrix} 1+x & 2+x & 3+x \\ 1 & 3 & -1 \\ 6 & 4 & 2 \end{bmatrix} \rightarrow 2 \begin{vmatrix} 1+x & 2+x & 3+x \\ 1 & 3 & -1 \\ 3 & 2 & 1 \end{vmatrix}$$

$$2\left(3x(-2-x-9-3x) - 2(-1-x-3-x) + (3+3x-2-x)\right)$$

$$2(-33-12x+8+4x+1+2x) = -48-12x$$

$$\begin{bmatrix} x & x^2 & x^3 \\ x^8 & x^9 & x^4 \\ x^7 & x^6 & x^5 \end{bmatrix} \longrightarrow \begin{bmatrix} x & x^2 & x^3 \\ 0 & 0 & x^4 - x^{10} \\ 0 & x^6 - x^8 & x^5 - x^9 \end{bmatrix}$$

$$\det = x\left(-(x^4 - x^{10})(x^6 - x^8)\right) = x\left(x^4(x^6 - 1) \cdot x^6(1 - x^2)\right)$$

$$= x^{11}(x^6 - 1)(1 - x^2)$$