



ใบกิจกรรม 2.3.3

เรื่อง ดีเทอร์มิแนนต์ของเมทริกซ์

$$A = \begin{bmatrix} 6 & 0 \\ 12 & 1 \end{bmatrix} \text{ แล้ว } \det(A) = (\text{pink box} \times \text{pink box}) - (\text{pink box} \times \text{pink box}) = \text{pink box}$$

$$B = \begin{bmatrix} -1 & 5 \\ -3 & 4 \end{bmatrix} \text{ แล้ว } \det(B) = (\text{blue box} \times \text{blue box}) - (\text{blue box} \times \text{blue box}) = \text{blue box}$$

$$C = \begin{bmatrix} 2 & 5 & 4 \\ 3 & 1 & 2 \\ 7 & 0 & 1 \end{bmatrix} \text{ แล้ว } \det(C) = \begin{bmatrix} 2 & 5 & 4 \\ 3 & 1 & 2 \\ 7 & 0 & 1 \end{bmatrix}$$

Diagram showing the expansion of the determinant of matrix C using the first row. Green dashed arrows point from the elements 2, 5, and 4 to the minors $\begin{vmatrix} 1 & 2 \\ 0 & 1 \end{vmatrix}$, $\begin{vmatrix} 3 & 2 \\ 7 & 1 \end{vmatrix}$, and $\begin{vmatrix} 3 & 1 \\ 7 & 0 \end{vmatrix}$ respectively. Red dashed arrows point from the elements 3, 1, and 2 to the minors $\begin{vmatrix} 2 & 4 \\ 7 & 1 \end{vmatrix}$, $\begin{vmatrix} 2 & 4 \\ 3 & 1 \end{vmatrix}$, and $\begin{vmatrix} 2 & 5 \\ 7 & 0 \end{vmatrix}$ respectively. The calculation is shown as:

$$= \text{green box} + \text{green box} + \text{green box} = \text{green box}$$
$$= \text{green box} - \text{red box}$$
$$= \text{blue box}$$

$$D = \begin{bmatrix} 6 & 5 & 1 \\ 0 & 4 & 3 \\ 1 & 2 & 4 \end{bmatrix} \text{ แล้ว } \det(D) = \begin{bmatrix} 6 & 5 & 1 \\ 0 & 4 & 3 \\ 1 & 2 & 4 \end{bmatrix}$$

Diagram showing the expansion of the determinant of matrix D using the first row. Green dashed arrows point from the elements 6, 5, and 1 to the minors $\begin{vmatrix} 4 & 3 \\ 2 & 4 \end{vmatrix}$, $\begin{vmatrix} 0 & 3 \\ 1 & 4 \end{vmatrix}$, and $\begin{vmatrix} 0 & 4 \\ 1 & 2 \end{vmatrix}$ respectively. Red dashed arrows point from the elements 0, 4, and 3 to the minors $\begin{vmatrix} 6 & 1 \\ 1 & 4 \end{vmatrix}$, $\begin{vmatrix} 6 & 1 \\ 0 & 3 \end{vmatrix}$, and $\begin{vmatrix} 6 & 5 \\ 1 & 2 \end{vmatrix}$ respectively. The calculation is shown as:

$$= \text{green box} + \text{green box} + \text{green box} = \text{green box}$$
$$= \text{green box} - \text{red box}$$
$$= \text{blue box}$$

