



ชื่อ.....ชั้น.....เลขที่.....

แบบฝึกหัด เรื่อง การคูณเมทริกซ์ด้วยเมทริกซ์

1. จงหาผลคูณ AB ในแต่ละข้อต่อไปนี้

1.1. $A = \begin{bmatrix} 1 & 4 \end{bmatrix}$, $B = \begin{bmatrix} -2 \\ 3 \end{bmatrix}$

$$AB = \begin{bmatrix} 1(\text{.....}) + 4(\text{.....}) \\ \text{.....} \end{bmatrix}$$

1.2 $A = \begin{bmatrix} 3 & 6 & -2 \end{bmatrix}$, $B = \begin{bmatrix} -2 \\ 0 \\ 5 \end{bmatrix}$

$$AB = \begin{bmatrix} 3(\text{.....}) + 6(\text{.....}) + (-2)(\text{.....}) \\ \text{.....} \end{bmatrix}$$

1.3 $A = \begin{bmatrix} 12 & 5 & 2 \end{bmatrix}$, $B = \begin{bmatrix} 8 & 5 \\ 2 & 6 \\ 4 & -7 \end{bmatrix}$

$$AB = \begin{bmatrix} (\text{.....})(\text{.....}) + (\text{.....})(\text{.....}) + (\text{.....})(\text{.....}) & (\text{.....})(\text{.....}) + (\text{.....})(\text{.....}) + (\text{.....})(\text{.....}) \\ \text{.....} & \text{.....} \end{bmatrix}$$

1.4 $A = \begin{bmatrix} 5 & -14 & 6 \\ 6 & 3 & 7 \end{bmatrix}$, $B = \begin{bmatrix} 6 \\ 9 \\ 5 \end{bmatrix}$

$$AB = \begin{bmatrix} (\text{.....})(\text{.....}) + (\text{.....})(\text{.....}) + (\text{.....})(\text{.....}) \\ (\text{.....})(\text{.....}) + (\text{.....})(\text{.....}) + (\text{.....})(\text{.....}) \\ \text{.....} \\ \text{.....} \end{bmatrix}$$



$$A = \begin{bmatrix} 3 & 0 & -4 \\ 5 & 2 & 1 \\ 1 & -3 & 6 \end{bmatrix}, \quad B = \begin{bmatrix} 4 & 0 & 0 \\ 0 & 4 & 0 \\ 0 & 0 & 4 \end{bmatrix}$$

$$AB = \begin{bmatrix} \boxed{}\boxed{} + \boxed{}\boxed{} + \boxed{}\boxed{} & \boxed{}\boxed{} + \boxed{}\boxed{} + \boxed{}\boxed{} & \boxed{}\boxed{} + \boxed{}\boxed{} + \boxed{}\boxed{} \\ \boxed{}\boxed{} + \boxed{}\boxed{} + \boxed{}\boxed{} & \boxed{}\boxed{} + \boxed{}\boxed{} + \boxed{}\boxed{} & \boxed{}\boxed{} + \boxed{}\boxed{} + \boxed{}\boxed{} \\ \boxed{}\boxed{} + \boxed{}\boxed{} + \boxed{}\boxed{} & \boxed{}\boxed{} + \boxed{}\boxed{} + \boxed{}\boxed{} & \boxed{}\boxed{} + \boxed{}\boxed{} + \boxed{}\boxed{} \end{bmatrix}$$

$$= \begin{bmatrix} \boxed{} & \boxed{} & \boxed{} \\ \boxed{} & \boxed{} & \boxed{} \\ \boxed{} & \boxed{} & \boxed{} \end{bmatrix}$$

2. กำหนดให้ $A = \begin{bmatrix} 0 & 4 \\ 2 & 3 \end{bmatrix}$, $B = \begin{bmatrix} 3 & 1 \\ 2 & 0 \end{bmatrix}$, $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ จงหาเมทริกซ์ในแต่ละข้อต่อไปนี้

$$2.1 \quad AB = \begin{bmatrix} \boxed{}\boxed{} + \boxed{}\boxed{} & \boxed{}\boxed{} + \boxed{}\boxed{} \\ \boxed{}\boxed{} + \boxed{}\boxed{} & \boxed{}\boxed{} + \boxed{}\boxed{} \end{bmatrix}$$

$$= \begin{bmatrix} \boxed{} & \boxed{} \\ \boxed{} & \boxed{} \end{bmatrix}$$

$$2.2 \quad A^2 = AA = \begin{bmatrix} \boxed{}\boxed{} + \boxed{}\boxed{} & \boxed{}\boxed{} + \boxed{}\boxed{} \\ \boxed{}\boxed{} + \boxed{}\boxed{} & \boxed{}\boxed{} + \boxed{}\boxed{} \end{bmatrix}$$

$$= \begin{bmatrix} \boxed{} & \boxed{} \\ \boxed{} & \boxed{} \end{bmatrix}$$



$$2.3 \quad A^3 = AA^2$$

$$= A(AA)$$

$$= \begin{bmatrix} \boxed{} & \boxed{} \\ \boxed{} & \boxed{} \end{bmatrix} \begin{bmatrix} (\dots)(\dots) + (\dots)(\dots) & (\dots)(\dots) + (\dots)(\dots) \\ (\dots)(\dots) + (\dots)(\dots) & (\dots)(\dots) + (\dots)(\dots) \end{bmatrix}$$

$$= \begin{bmatrix} \boxed{} & \boxed{} \\ \boxed{} & \boxed{} \end{bmatrix} \begin{bmatrix} \boxed{} & \boxed{} \\ \boxed{} & \boxed{} \end{bmatrix}$$

$$= \begin{bmatrix} (\dots)(\dots) + (\dots)(\dots) & (\dots)(\dots) + (\dots)(\dots) \\ (\dots)(\dots) + (\dots)(\dots) & (\dots)(\dots) + (\dots)(\dots) \end{bmatrix}$$

$$= \begin{bmatrix} \boxed{} & \boxed{} \\ \boxed{} & \boxed{} \end{bmatrix}$$

$$2.4 \quad IA$$

$$= \begin{bmatrix} \boxed{} & \boxed{} & \boxed{} & \boxed{} \\ \boxed{} & \boxed{} & \boxed{} & \boxed{} \end{bmatrix}$$

$$= \begin{bmatrix} \boxed{} & \boxed{} \\ \boxed{} & \boxed{} \end{bmatrix}$$

$$2.5 \quad AI$$

$$= \begin{bmatrix} \boxed{} & \boxed{} & \boxed{} & \boxed{} \\ \boxed{} & \boxed{} & \boxed{} & \boxed{} \end{bmatrix}$$

$$= \begin{bmatrix} \boxed{} & \boxed{} \\ \boxed{} & \boxed{} \end{bmatrix}$$

$$2.6 \quad I^2 = II$$

$$= \begin{bmatrix} \boxed{} & \boxed{} & \boxed{} & \boxed{} \\ \boxed{} & \boxed{} & \boxed{} & \boxed{} \end{bmatrix}$$





3. กำหนดให้ $A = \begin{bmatrix} 3 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 1 \end{bmatrix}$, $B = \begin{bmatrix} 2 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 2 \end{bmatrix}$ จงหาเทริกซ์ในแต่ละข้อต่อไปนี้

3.1 $B^2 =$

3.2 $B^3 =$

3.3 $B^3 A =$
