2X2 MATRIX MULTIPLICATION ANSWER SHEET

Exercise 1:

a) $\begin{pmatrix} 2\times 5 & -2\times 2 \\ 2\times 0 & 2\times 6 \end{pmatrix} = \begin{pmatrix} 10 & -4 \\ 0 & 12 \end{pmatrix}$

b) $\begin{pmatrix} 9 & 27 \\ -108 & -45 \end{pmatrix}$

c) $\begin{pmatrix} -6w & 12y \\ 15 & -3y \end{pmatrix}$

d) $\begin{pmatrix} -48 & 12 \\ 36 & 8 \end{pmatrix}$

Exercise 2:

$\begin{pmatrix} 2k & 3k \\ 5k & 6k \end{pmatrix} = \begin{pmatrix} 6 & 9 \\ 15 & 18 \end{pmatrix}$

$2k = 6 \quad 3k = 9$

$5k = 15 \quad 6k = 18$

$\Rightarrow k = 3$

Exercise 3:

$$\begin{pmatrix} 2x \\ 4 \end{pmatrix} - \begin{pmatrix} 6 \\ y \end{pmatrix} = \begin{pmatrix} 5 \\ 3 \end{pmatrix}$$

$2x - 6 = 5$ $\qquad$ $4 - y = 3$

$2x = 11$ $\qquad$ $y = 4 - 3$

$x = \frac{11}{2}$ $\qquad$ $y = 1$

Exercise 4:

a) $AB = \begin{pmatrix} 10 & 2 \\ 10 & 2 \end{pmatrix}$ $\qquad$ b) $AB = \begin{pmatrix} -23 & -27 \\ 44 & 16 \end{pmatrix}$

Exercise 5:

a) $3A - BA = \begin{pmatrix} 9 & 27 \\ 12 & 36 \end{pmatrix} - \begin{pmatrix} -6 & -18 \\ 42 & 150 \end{pmatrix} = \begin{pmatrix} 15 & 45 \\ -30 & -114 \end{pmatrix}$

b) $AB = \begin{pmatrix} 60 & 63 \\ -64 & 84 \end{pmatrix}$

c) $BA - A = \begin{pmatrix} -6 & -18 \\ 42 & 150 \end{pmatrix} - \begin{pmatrix} 3 & 9 \\ 4 & 12 \end{pmatrix} = \begin{pmatrix} -9 & -27 \\ 38 & 138 \end{pmatrix}$

d) $AB - 4A = \begin{pmatrix} 60 & 63 \\ -64 & 84 \end{pmatrix} - \begin{pmatrix} 12 & 36 \\ 16 & 48 \end{pmatrix} = \begin{pmatrix} 48 & 27 \\ -80 & 36 \end{pmatrix}$