# Worksheet: Matrix Operations 

Exercise I.

$$
A=\left[\begin{array}{cc}
2 & 3 \\
4 & -6
\end{array}\right] \quad B=\left[\begin{array}{cc}
1 & 8 \\
-2 & 3
\end{array}\right]
$$

1. $A+B=$
2. $B+A=$
3. $A-B=$
4. $B-A=$
5. $2 B=$
6. $B 2=$

$$
A=\left[\begin{array}{cc}
2 & 3 \\
4 & -6
\end{array}\right] \quad B=\left[\begin{array}{cc}
1 & 8 \\
-2 & 3
\end{array}\right]
$$

7. $A-2 B=$
8. $A B=$
9. $B A=$

Exercise II.

$$
A=\left[\begin{array}{ll}
a_{11} & a_{12} \\
a_{21} & a_{22} \\
a_{31} & a_{32}
\end{array}\right]_{-x_{-}} \quad B=\left[\begin{array}{l}
b_{11} \\
b_{21}
\end{array}\right]_{-\times-}
$$

Is it possible to find $A B$ ? If yes, solve for it. What is its dimension?

Is it possible to find $B A$ ? If yes, solve for it. What is its dimension?

Exercise III. $A$ has 1 row and 2 columns and $B$ has 2 rows and 3 columns.

1. What is the dimension of $C=A B$ ? Write down the expression for $c_{12}$ in terms of elements of $A$ and $B$ denoted by $a$ and $b$, respectively. Pay careful attention to the subscripts.
2. Now rewrite the above expression using summation notation.
3. Write expressions for $c_{11}$ and $c_{13}$ using summation notation as well.
