## Question 1 How can I create matrices like

$$
\left[\begin{array}{ccc}
1 & 2 & 3 \\
4 & B
\end{array}\right] ?
$$

Answer: This can be easily done since arrays can be nested!


It is a little more difficult if $B$ has to be huge because then you have to manually tune its position vertically (arrays do have the optional argument b or $t$ but here we need finer tuning):

The two first columns (of the first array) can come closer if spacing does not look right for you by removing the extra space as follows:

$$
\begin{aligned}
& \text { \$\$ } \\
& \text { \left [\begin\{array\}\{c@\{\}c\} } }{ \text { \left [\begin\{array\}\{c@\{\}c\} } } \\
{\left[\begin{array}{ccc}
1 & 2 & 3 \\
4 & B \\
5 & B
\end{array}\right]} \\
{1 \text { \& \begin\{array\}\{cc\} } 2 \text { \& 3\end\{array\}\\
} } \\
{ \text { \begin\{array\}\{c\} } 4 \text { \\
5\end\{array\} \& } } \\
{ \text { \hbox\{\huge \raise-.5ex\hbox\{\$B\$\}\} } } \\
{ \text { \end\{array\}\right] } } \\
{ \text { \$\$ } }
\end{array}}
\end{aligned}
$$

Of course if you want some other spacing then you may insert a \hspace command as follows:

$$
\begin{aligned}
& \text { \$\$ } \\
& \text { \left[\begin\{array\}\{c@\{\hspace\{.5em\}\}c\} } }{ \text { \left[\begin\{array\}\{c@\{\hspace\{.5em\}\}c\} } } \\
{1 \& \backslash \text { begin\{array\}\{cc\} } 2 \& 3 \backslash e n d\{a r r a y\} \backslash \backslash} \\
{\text { \begin\{array\}\{c\} } 4 \text { \\
5\end\{array\} \& } } \\
{ \text { \hbox\{\huge \raise-.5ex\hbox\{\$B\$\}\} } } \\
{ \text { \end\{array\}\right] } }
\end{array}}
\end{aligned}
$$

